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CARCINOMA OF THE LARYNX

SURVEY OF 25 YEARS' EXPERIENCE IN TREATMENT BY SURGERY AND IRRADIATION

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• *The results of surgery and radiation have been studied in 1,066 patients treated for carcinoma of the larynx from 1930 to 1955. The treatment was partial laryngectomy in 384 cases, total laryngectomy in 374, laryngectomy with radical dissection of the neck in 48, and irradiation in 260. Data on five-year survival were obtained in 695 patients; the rate was highest (87%) for partial laryngectomy, intermediate (64%) for total laryngectomy, and lowest (42%) for irradiation. There were 201 patients in whom total laryngectomy was the initial treatment, who did not die of other causes, and who were followed up after operation; 37 of these developed cervical metastases. Of the 14 in this group who were treated by irradiation alone, none survived. Comparison of the most recent figures with those reported in 1948 showed that the over-all survival rate had remained unchanged at 72%.*

Eight years ago we presented before the Section on Laryngology, Otology and Rhinology a survey on cancer of the larynx.[1] While the cases considered in that earlier study are all included in the present one, we now have treated over 1,000 patients and will give five-year end-results on 695 patients seen in the 20-year period from 1930 to 1949 inclusive. Preliminary study of the material served as the basis for an exhibit presented at the 104th Annual Meeting of the American Medical Association in 1955 and subsequently published.[2] The material has been further studied and statistics further analyzed for this report.

Criteria for the selection of treatment method have been discussed by Jackson and Blady[3] and by Blady.[4] The fundamental principles remain unchanged, though there have been some new developments. Although they have already been stated in the above-mentioned scientific exhibit,[2] we shall review briefly the indications for the various treatment methods as we see them today.

Indications for Various Treatment Methods

The indications for surgical excision by some form of partial laryngectomy, according to our views, are as follows: (1) cancer of one cord limited to the middle third, with free motility (laryngofissure); (2) cancer of one cord reaching the anterior but not the posterior extremity (laryngofissure by the anterior commissure technique); (3) cancer of both cords involving the anterior commissure but not the posterior extremity of the cord (partial frontal laryngectomy); and (4) cancer of the epiglottis and supraglottic region, with limited lesions (epiglottidectomy or partial horizontal laryngectomy [Alonso] combined with dissection of the neck if desired).

The indications for total laryngectomy, as we see them, are as follows: (1) cancer of the vocal cord that reaches the posterior extremity, producing fixation or extending subglottically, (2) cancer of the ventricular band or ventricle ("wide-field" laryngectomy, with or without simultaneous radical dissection of the neck); (3) cancer of the epiglottis and supraglottic region; and (4) cancer of the larynx with palpable cervical metastasis (laryngectomy combined with radical dissection of the neck).

Irradiation is used as a primary treatment method in cases of cancer of the vocal cord without fixation that is too extensive or poorly demarcated for laryngofissure (involving posterior extremity) and in cases of cancer of the epiglottis limited to its free portion, especially if the cancer is of undifferentiated type. Formerly irradiation was often advised because of extension of the cancer to the pharynx or base of tongue, but today surgery, even though it must be extensive, is preferred in such cases. In very rare instances, roentgenotherapy is given because the patient refuses operation.

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Techniques of Treatment

The evolution of surgical techniques has very recently been reviewed by Jackson and Norris [5] and the latest methods of both partial and total laryngectomy described. One important development in the technique of partial laryngectomy is that now almost always a portion of the underlying thyroid ala is removed en bloc with the soft tissue composing the tumor and surrounding area. We believe that the limited tumors involving the anterior commissure can be removed in such a manner with a very high survival rate. Another important development in the surgical technique is the more widespread performance of simultaneous neck dissection with total laryngectomy.

TABLE 1.—*Primary Treatment in 1,066 Patients with Cancer of the Larynx, 1930-1955*

Yr.	Partial Laryngectomy*	Total Laryngectomy	Laryngectomy-Simultaneous Radical Dissection of Neck	Irradiation
1930	7	15	..	..
1931	5	9	..	1
1932	8	8	..	1
1933	14	5	..	4
1934	8	12	..	6
1935	8	12	..	6
1936	7	11	..	9
1937	14	11	..	9
1938	5	5	..	13
1939	12	21	..	7
1940	11	16	..	6
1941	12	9	..	18
1942	6	19	..	13
1943	13	15	..	12
1944	16	12	..	9
1945	16	13	2	9
1946	23	11	..	16
1947	21	23	..	15
1948	15	11	..	20
1949	22	19	..	21
1950	20	21	7	15
1951	25	18	5	11
1952	27	13	9	8
1953	19	22	9	11
1954	24	16	11	14
1955	26	27	5	6
Totals	384	374	48	260

* Laryngofissure, partial horizontal laryngectomy (Alonso), partial frontal laryngectomy, etc.

TABLE 2.—*Five-Year Survival Rate of 695 Patients Treated Initially by Partial Laryngectomy, Total Laryngectomy, or Irradiation, 1930-1949*

Initial Treatment	Total Cases, No.	Indeterminate: Lost to Follow-up, No.	Indeterminate: Died of Other Causes, No.	Determinate, No.	Five-Year Survival: No.	Five-Year Survival: %
Partial laryngectomy	243	11	22	210	183	87
Total laryngectomy	257	17	39	201	128	64
Irradiation	195	4	22	169	71	42
Totals	695	32	83	580	382	66

The technique of radiotherapy at the Temple University Medical Center has changed very little over the 25-year period covered by this study. Qualities of half-value layer 2 to 3 mm. Cu have been used, with generators increasing slightly in voltage from 160 kvcp in the early years through 180, 210, and 230 to the present 250 kvcp. Early doses were 3 to 4 r per minute; now they are about 50 r per minute. We deliver 125 r per minute in air daily to each of two lateral portals. For the past 10 years doses of approximately 5,000 r in five weeks have been employed for treatment of tumors, with occasional modification as needed. In the last 15 years, circular cones with a diameter of 6 to 8 cm. have been most commonly used. The use of larger portals was more common in the first 10 years of the study than it is now; now one is used only for palliation.

The clinical material on which the present study is based consists of reports on all patients with cancer of the larynx, intrinsic or extrinsic, with or without palpable nodes, treated initially by us at the Temple University Medical Center since Jan. 1, 1930. It does not include patients seen only in consultation and treated elsewhere, nor does it include patients with cancer of the hypopharynx.

From 1930 to 1955, inclusive, 1,066 patients with cancer of the larynx were treated. Surgical treatment was used in 806 of them and irradiation therapy in 260 (table 1). Five-year end-results have been computed on the patients treated prior to 1950, that is, from 1930 to 1949 inclusive. Of the patients treated by laryngofissure or some other form of partial laryngectomy, 210 were classified as determinate, that is, the patients did not die of other causes and were followed up after the operation. Total laryngectomy had been done in 201 determinate cases. In 169 other determinate cases, irradiation had been used (table 2).

TABLE 3.—*Treatment of Recurrence After Partial Laryngectomy, 1930-1949**

Treatment	Total Cases, No.	Determinate, No.	Dead of Disease, No.	Five-Year Survival, No.
Second partial laryngectomy	2	2	0	2
Second partial then total laryngectomy	1	1	0	1
Total laryngectomy	5	5	1	4
Total laryngectomy and x-ray	3	1	1	0
X-ray or radium	8	7	5	2
Untreated or treated elsewhere	3	3	3	0
Totals	22	19	10	9(47%)

* Both recurrence and metastasis occurred in 2 cases.

Recurrences

The methods used in the treatment of recurrence and metastasis occurring after partial laryngectomy and the results obtained are shown in table 3. Recurrence occurred in 20 cases and both recurrence and metastasis in 2. Of the 19 patients who were determinate, 9, or 47%, were still living without evidence of disease five years after the treatment for recurrence.

Of 35 patients who had recurrence after total laryngectomy, all were determinate (table 4). There was only local recurrence in 20 patients and both recurrence and metastasis in 15. In our previous report,[1] we could claim no five-year survival rate in patients who developed recurrence after total laryngectomy, but, of the 35 patients reported on in the present series, 2, or 6% survived five years after treatment for recurrence.

Of 40 cases of failure of initial treatment by irradiation, all but 2 were determinate. The results obtained in these patients who were treated by various means

after recurrence are shown in table 5. In all, 12, or 32%, of the patients were still living five years after the treatment for recurrence.

Metastasis

None of the patients treated by partial laryngectomy had palpable cervical metastasis when first seen. Two patients treated by total laryngectomy in 1945 had palpable nodes; in these cases laryngectomy and simultaneous dissection of the neck were done. Both of these individuals died of their disease. Of the 195 patients treated initially by roentgenotherapy, 45 had palpable nodes when first seen. In 12 of them dissection of the neck was done, but only 3 patients in the series survived. None of the patients treated by roentgenotherapy alone survived.

Metastasis developing after initial treatment was studied separately. In the group treated by partial laryngectomy, four patients developed metastasis

TABLE 4.—*Treatment of Recurrence After Total Laryngectomy, 1930-1949*

Treatment	Total Cases, No.	Determinate, No.	Dead of Disease, No.	Five-Year Survival, No.
Resection	6	6	4	2
Resection and x-ray	1	1	1	0
Irradiation alone	11	11	11	0
Untreated or treated elsewhere	17	17	17	0
Totals	35	35	33	2(6%)

without local recurrence; two developed metastasis associated with local recurrence; and one developed metastasis after local recurrence had been treated by total laryngectomy. Of the four patients developing metastasis without local recurrence, one was treated by dissection of the neck, one by irradiation, and two either were not treated or were treated elsewhere. The two with simultaneous recurrence and metastasis were treated by irradiation. The patient who developed metastasis late after a total laryngectomy had been done because of local recurrence was treated by roentgenotherapy, dissection of the neck, and radon (radium emanation) implantation. The last-mentioned patient was the only one in the group who survived.

as follows: seven by x-ray, one by radon implantation, and two by neck dissection and radon; four either were not treated or were treated elsewhere. The only survivor is one of the patients treated by dissection of the neck and irradiation.

TABLE 5.—*Treatment of Recurrence After Irradiation Therapy, 1930-1949*

Treatment	Total Cases, No.	Determinate, No.	Dead of Disease, No.	Five-Year Survival, No.	Five-Year Survival, %
Further irradiation	19	19	16	3	16
Partial laryngectomy	3	3	0	3	100
Laryngectomy	8	6	2	4	67
Laryngectomy and radical neck dissection	3	3	1	2	67
No treatment	7	7	7	...	...
Totals	40	38	26	12	32

Prior to 1948 it had been our practice to treat patients who had palpable cervical metastasis when first seen by protracted fractional irradiation for the primary disease and by radical dissection of the neck, with or without radon implantation, for the metastases. Our present practice is to do a laryngectomy and simultaneous en bloc dissection of the neck in all cases of palpable unilateral metastasis. In the case of bilateral palpable metastasis, one side is extirpated at the time of laryngectomy and the other after a short

TABLE 6.—*Treatment of Metastases After Total Laryngectomy, 1930-1949*

Treatment	Total Cases, No.	Determinate, No.	Dead of Disease, No.	Five-Year Survival, No.
Excision with radon or x-ray	1	1	0	1
Radical dissection of neck alone	2	2	1	1
Radical dissection of neck and radon implantation or x-ray	8	7	5	2
Irradiation alone	14	14	14	0
Untreated or treated elsewhere	13	13	13	0
Totals	38	37	33	4(10%)

interval. Elective dissection of the neck is generally done in cases of unilateral supraglottic lesions in view of the fact that about 50% of such lesions give rise to cervical metastasis. Simultaneous laryngectomy and dissection of the neck have been done in 48 patients

TABLE 7.—*Five-Year Survival Rate of 580 Patients After Initial Treatment and After Further Treatment of Recurrence and/or Metastases, 1930-1949*

Treatment	Determinate Cases, No.	Five-Year Survival After Initial Treatment, No.	Five-Year Survival After Initial Treatment, %	Recurrence and/or Metastases, No.	Five-Year Survival After Further Treatment, No.	Total Survival, No.	Total Survival, %
Partial laryngectomy	210	183	87	26	9	192	91
Total laryngectomy	201	128	64	73	6	134	67
Irradiation	169	71	42	98	19	90	53
Totals	580	382	66	197	34	416	72

Of the 201 patients upon whom total laryngectomy was done as initial treatment and who were determinate, 37 developed cervical metastasis (table 6). There were four survivors in the group. It is interesting to note that none of the 14 patients treated by irradiation alone survived.

Fourteen of the 169 patients who were determinate and who were treated initially by irradiation developed metastasis subsequently. They were treated in our series, but only 2 of them were in the 20-year period for which end-results are given in this report; therefore, no conclusions can be drawn from end-results in this group.

End-results

The end-results obtained in the 580 determinate cases of patients treated by surgery and irradiation in the 20-year period, 1930-1949, are shown in table 7. It

will be noted that the 87% five-year survival rate obtained by partial laryngectomy as initial treatment was raised to 91% for the patients in this group by the subsequent salvage of nine patients by means of further treatment. The over-all five-year survival rate was raised from 66% to 72% by the salvage of 34 patients who developed recurrence and/or metastasis after initial treatment.

Comparison of these figures with those reported in 1948[1] shows that the over-all survival rate of 72% is the same for both reports. It is interesting to note that the survival rate obtained by partial laryngectomy has slightly improved, from 88% to 91%, as has also the rate obtained by total laryngectomy, from 65% to 67%. However, the survival rate obtained by irradiation has fallen from 64% to 53%. We have not been able to find an entirely satisfactory explanation for this; however, since no radical changes have been made in the techniques of irradiation, we are inclined to think that the explanation must lie in the selection of cases rather than in the efficacy of roentgenotherapy.

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TREATMENT OF PATIENTS WITH CERVICODORSAL OUTLET SYNDROME

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• *The cervicodorsal outlet is not an anatomic structure but the region in which the nerves and blood vessels leave the neck and thorax and are transmitted to the upper extremity. Compression or stretching of the neurovascular structures in this region can cause pain, numbness, and discomfort in the shoulder and upper extremity, but the complaints are usually vague and frequently there are no objective findings. The majority of patients with this syndrome respond favorably to conservative treatment consisting of physical therapy, reassurance, and avoidance of activities or positions bringing on the complaints.*

Pain, numbness, and discomfort in the shoulder and upper extremity can be caused by compression or stretching of neurovascular structures in the region of the cervicodorsal outlet. The mechanism of this compression or stretching varies, and, on the basis of this variation, a number of terms are used to delineate the condition, namely, cervical rib syndrome, scalenus anticus syndrome, subcoracoid pectoralis minor syndrome (also called hyperabduction syndrome), costoclavicular syndrome, first thoracic rib syndrome, and brachialgia statica paraesthetica. However, because it is often difficult to determine the specific mechanism involved, the more inclusive terms of cervicodorsal outlet syndrome or neurovascular syndrome are frequently preferred.

In a patient with cervicodorsal outlet syndrome, the complaints usually are vague and there are frequently no objective findings on examination. As a consequence, many physicians have considered the symptoms to be primarily psychogenic and not due to any organic pathological condition. Other physicians have become curious as to the cause of persistence of complaints and have referred the patients elsewhere for further diagnostic study. Unfortunately, few physicians today realize that physical therapy can be most helpful in obtaining symptomatic relief.

The symptoms that comprise the outlet syndrome can be considered under three headings: mild, moderate, and severe. The patient with mild involvement is the one most commonly seen. His symptoms are intermittent aching, pain, numbness, coldness, tingling, "pins and needles," weakness, stiffness, or a dragging feeling usually localized to the ulnar side of the hand but occasionally involving the forearm, arm, shoulder, chest wall, and neck. In addition to these symptoms, the patient with moderate involvement complains of changes in appearance of the hands, such as blanching, bluish duskiness, or increased sweating, which may be reproduced with certain positions of the arms. The patient with severe involvement may have any of the symptoms already described and, in addition, loss of sensation, weakness in specific muscles, swelling near the base of the neck, and sores on the tips of the fingers. Fortunately, severe involvement occurs infrequently.

The condition of a patient having the symptoms of outlet syndrome should be carefully evaluated on the basis of the findings of a detailed history, a thorough physical examination, and the necessary roentgenographic and laboratory studies. On physical examination, the neck, shoulders, and upper extremities should receive special attention. Any abnormal stance, such as drooping of one or both shoulders, forward posi-

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tion of the head, or dorsal kyphosis or scoliosis, and any muscular atrophy or weakness, sensory loss, swollen or tender areas near the clavicle, abnormal reflexes, limitation of joint motion, or increased nervous tension should be noted. The effect of downward pressure upon the vertex and of upward traction under the chin and occiput should be tested.

Finally, one should note the effects of the following maneuvers upon the amplitude of the radial pulse and upon the patient's subjective reaction: (1) the so-called hyperabduction maneuver, which consists of sideward elevation of the arm beyond 90 degrees (fig. 1*A*); (2) forced depression of the shoulder girdle (fig. 1*B*); (3) bracing or maximal retraction of the shoulder girdle (fig. 1*C*); (4) the Adson test, that is, holding the breath in deep inspiration while the neck is held in slight hyperextension and the head turned toward the affected side (fig. 1*D*); and (5) the Allen test, that is, turning of the head to the unaffected side, with the arm elevated sideward to 90 degrees and externally rotated and the elbow bent at a right angle (fig. 1*E*). Although diagnostic aids, these maneuvers should not be overemphasized in establishing the diagnosis of outlet syndrome. However, if the radial pulse is obliterated and the patient's symptoms are reproduced during the maneuvers, they can be interpreted as indicative of this syndrome.

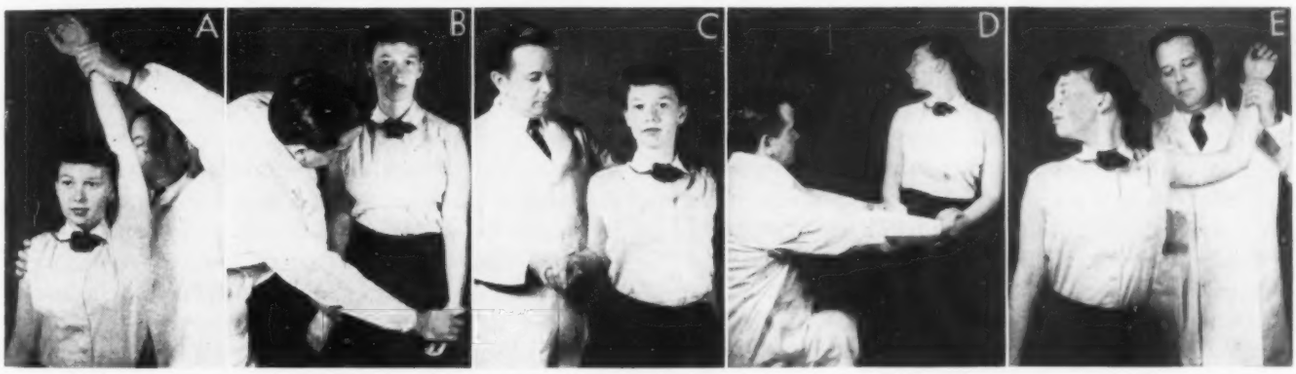

Fig. 1.—Maneuvers serving as aids in diagnosis of cervicodorsal outlet syndrome. *A*, hyperabduction maneuver, that is, sideward elevation of arm beyond 90 degrees. *B*, forced depression of shoulder girdle. *C*, bracing or maximal retraction of shoulder girdle. *D*, Adson test, that is, with the neck held in slight hyperextension, turning of head toward the affected side and holding breath in deep inspiration. *E*, Allen test, that is, with arm elevated sideward to 90 degrees and externally rotated and with the elbow bent at a right angle, turning of head toward the unaffected side.

Roentgenograms of the chest, cervical spine, and shoulder should be obtained. Ordinarily, the following laboratory determinations will be ordered: hemoglobin level, leukocyte count, differential cell count, sedimentation rate, serology, and urinalysis. Occasionally, electromyography, electrocardiography, or spinal fluid examination will be necessary.

Differential Diagnosis

In the differential diagnosis of pain, numbness, and discomfort in the shoulder and upper extremity, common conditions such as osteoarthritis of the cervical spine, protruded cervical intervertebral disk, and anxiety tension state must be considered.

Osteoarthritis is not a true arthritis (i. e., inflammation of the joints) but the end-result of stresses and strains sustained by the body over the years. Osteoarthritis of the cervical spine is a common condition, because the extraordinary mobility of the neck makes it particularly susceptible to trauma. Since bony spurs or osteophytes are common in older people, caution must be observed in ascribing a patient's symptoms to osteoarthritic changes seen on roentgenograms, since it is possible that such changes might be entirely coincidental.

Pain caused by osteoarthritis is almost invariably the result of pressure upon a nerve root by an osteophyte. The onset of such pain may be gradual or sudden following some trivial injury or unexpected movement. It is usually of moderate severity; only rarely will a patient complain of excruciating pain. Typically, the pain arises in the back of the neck or in the shoulder and radiates down the arm to the wrist or fingers; occasionally, it may be referred to the sternum or chest wall or posteriorly to the occiput or scapula. The patient may complain of numbness or prickling sensations in the hand; this may be more pronounced in one or two fingers. Physical examination may reveal limitation of motion in the neck, protective muscle spasm, and tenderness in the posterior cervical region. Manual application of downward pressure upon the vertex frequently causes increased discomfort, and upward traction under the chin and occiput may provide relief of symptoms.

Protrusion of a cervical intervertebral disk can cause symptoms that may be confused either with those of osteoarthritis of the cervical spine or with those of the outlet syndrome. The onset of pain caused by protrusion of the nucleus pulposus results from the compression of a nerve root. The pain is intense and knife-like and radiates from the neck into the shoulder and upper extremity. Since any motion of the neck, coughing, or straining greatly intensifies the pain, the patient holds his neck rigid and resists any attempted movement. In contrast with osteoarthritis of the cervical spine, in which such findings are rare, protrusion of a cervical intervertebral disk may result in decreased or absent reflexes, loss of sensation, and muscular weakness and atrophy. Roentgenograms of the cervical spine usually reveal narrowing of one or more interspaces, loss of the normal lordotic curve, and osteoarthritic changes.

Undoubtedly the most frequent cause of pain and discomfort in the neck and shoulder is anxiety tension state with fibrositis, tension myalgia, or neuromuscular pains, which probably represent interrelated conditions. In these patients there often is sustained contraction or tightness in the upper trapezius, posterior cervical, and sternocleidomastoid muscles. When this contraction is maintained in a muscle for a prolonged period, there is interference with circulation and nourishment of the muscle fibers, which results in ischemic pain and edema and the formation of adhesions between the fibers; the adhesions then prevent the muscle from relaxing to its normal length. Pain that results from excessive nervous tension characteristically is a dull, pressure-like discomfort, rarely more than moderately severe in intensity, which is more pronounced later in the day and is aggravated by fatigue, emotional stress, and unpleasant weather. Upon arising in the morning, the patient may note muscular stiffness, which subsides as the day advances and as he has an opportunity to "limber up." Since anxiety tension state frequently accompanies organic pain syndromes such as osteoarthritis, neoplasm, and outlet syndrome, the diagnoses of tension myalgia, fibrositis, or neuromuscular pain should not be made until other causes of neck and shoulder distress have been excluded.

In the differential diagnosis, consideration must also be given to compression neuropathy of the median nerve in the carpal tunnel, since it may produce pain, numbness, and paresthesia in the hand and atrophy of the thenar muscles. In this condition, symptoms and hypesthesia, when present, are confined to the sensory distribution of the median nerve in the hand. The following tests frequently establish the diagnosis of carpal tunnel syndrome: 1. Extreme flexion of the wrist for 60 seconds. Reproduction of symptoms is interpreted as a positive wrist flexion test. 2. Light percussion over the median nerve at the wrist. When this produces a tingling sensation in the hand, it is interpreted as a positive Tinel sign. Decompression of the median nerve by section of the transverse carpal ligament is very successful in these cases.

Many other conditions can be confused with outlet syndrome, such as rheumatoid arthritis, Raynaud's disease, thromboangiitis obliterans, periarthritis, shoulder-hand syndrome, epicondylitis, superior pulmonary sulcus tumor (Pancoast's tumor), trauma to the brachial plexus, peripheral neuritis, herpes zoster, serum paralysis, syringomyelia, and progressive muscular atrophy.

Predisposing Factors

Sex.—A number of investigators[1] have reported that outlet syndrome occurs more often in women than in men. They have postulated that the predisposing factors in women are the greater tendency toward drooping of the shoulders, less vigorous physical activity, and the constant reaching above the head in many housework activities. On the other hand, Beyer and Wright[2] believe there is little difference in incidence between the sexes.

Age.—The outlet syndrome occurs most frequently in adults between 20 and 40 years of age. By that age, postural and occupational factors have had sufficient time to cause troublesome symptoms in persons who are predisposed to such involvement, for example, those who have congenital abnormality of the cervicodorsal outlet.

Congenital Anomalies.—Anomalies in development compressing neurovascular structures in the cervicodorsal outlet are important predisposing factors in the outlet syndrome. The following skeletal anomalies are frequently responsible for the development of outlet syndrome: cervical rib, long transverse process of seventh cervical vertebra, deformed first thoracic rib or clavicle, and cervicodorsal scoliosis. Fibrous bands are also an important cause of pressure upon neurovascular structures; they may narrow the division between the scalenus anticus and scalenus medius muscles, or they may connect the long transverse process of the seventh cervical vertebra to the first rib. Anomalies in development of the brachial plexus (for example, the supply of a branch from the second dorsal nerve root of the spinal cord at a level one segment lower than that normally found) and aberrant vascular supply are occasionally responsible for pulling, angulation, or pressure upon neurovascular structures.

Postural and Occupational Factors.—Postural and occupational factors are responsible for determining the time of onset of outlet syndrome in patients who by reason of anatomic relationships within the cervicodorsal outlet are predisposed to such involvement. Faulty posture leading to such difficulty consists of drooping shoulders, dorsal kyphosis, and forward position of head. Factors causing this stance include loss of muscle tone due to lack of exercise and changes related to aging, weight of heavy breasts, and in some cases specific weakness following injury or an attack of paralytic poliomyelitis.

The symptoms of outlet syndrome are aggravated when the arms are elevated for considerable periods of time, for example, while sleeping with the arms above the head, reading an open newspaper with arms outstretched, writing on a blackboard, driving an automobile, doing repair work while lying under a car, and hanging up clothes. Faulty positioning of the arms during surgical operations may initiate the syndrome, with paralysis and sensory loss in the upper extremities. Outlet syndrome is found rather frequently in persons engaged in such occupations as hair dressing, painting, construction work, and operating a switchboard. Forced depression of the shoulder girdle, such as occurs when a heavy suitcase is carried or a loaded wheelbarrow is pushed, and forced retraction of the shoulders, such as occurs when a heavy military pack is carried during a long march, can also precipitate symptoms of outlet syndrome..

Anxiety Tension State.—Increased nervous tension can be a factor in causing a patient to become concerned about mild symptoms, which would not ordinarily disturb him. Fear that discomfort in the arm or chest results from cancer, heart disease, or tuber-

culosis will often bring a patient to a physician. In this sense, then, anxiety tension state can be considered a predisposing factor in outlet syndrome.

Delineation of Condition by Anatomic Considerations

The cervicodorsal outlet is not an anatomic structure but the region in which the nerves and blood vessels leave the neck and thorax and are transmitted to the upper extremity (fig. 2). Within this region there is a triangular area formed by the scalenus anticus and scalenus medius muscles and the first rib, through which the subclavian artery and the trunks of the brachial plexus pass. The scalenus anticus muscle originates from the anterior tubercles of the third through the sixth cervical vertebrae and inserts upon the first rib anterior to the subclavian artery. The scalenus medius muscle arises from the posterior tubercles of the transverse processes of the third through the seventh cervical vertebrae and inserts upon the first rib posterior to the lower trunks of the brachial plexus. Because of its rigid boundaries, any additional structures (fig. 3) intruding into this triangular area, such as a cervical rib or a fibrous band between an elongated transverse process of the seventh cervical vertebra and the first rib, almost unavoidably compress the subclavian artery and the brachial plexus.

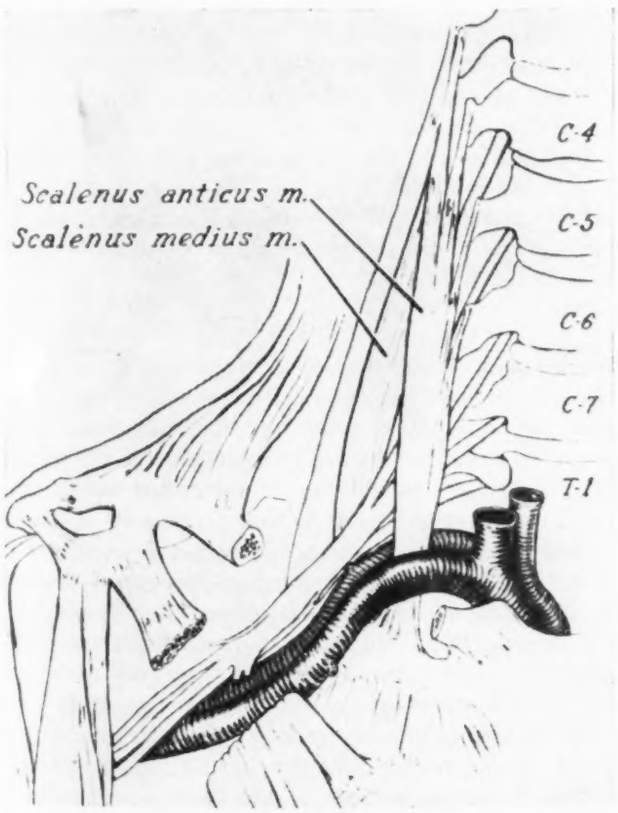

Fig. 2.—Anatomic relationships at cervicodorsal outlet. The subclavian artery and trunks of the brachial plexus pass through a triangular area enclosed by the scalenus anticus and the scalenus medius muscles and the first rib. The subclavian vein passes anteriorly to the insertion of the scalenus anticus muscle.

Compression of neurovascular structures can also be produced by pinching of the subclavian artery and vein and the brachial plexus between the clavicle and first rib or by stretching of these structures under the coracoid process and pectoralis minor muscle when the arm is elevated above the head.

Cervical Rib Syndrome.—The skeletal anomaly that most frequently causes compression of the neurovascular structures at the cervicodorsal outlet is a cervical

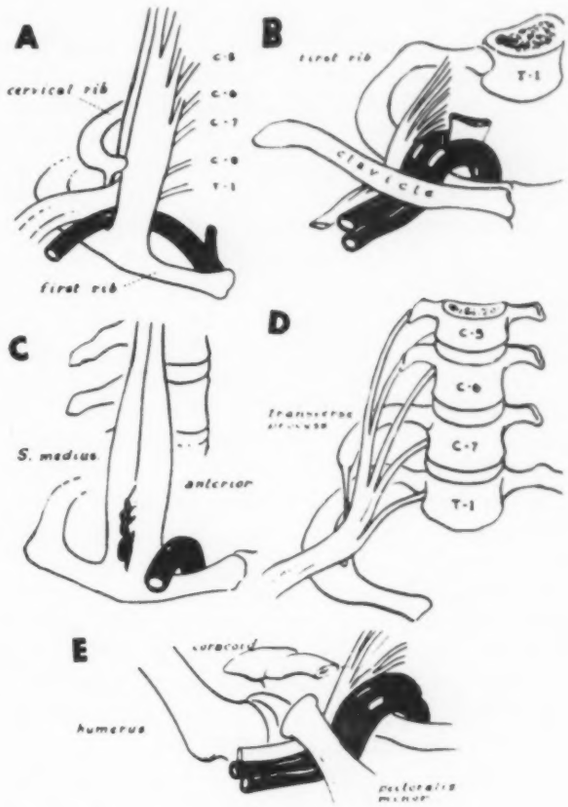

Fig. 3.—Compression of neurovascular structures in cervicodorsal outlet by *A*, cervical rib; *B*, clavicle and first rib; *C*, hypertrophied scalenus anticus muscle; *D*, angulation over fibrous band from an elongated transverse process of seventh cervical vertebra; and *E*, hyperabduction of arm.

rib (fig. 3*A*). This anomaly occurs in about 6 out of every 1,000 persons and is twice as common in women as in men. The role of this anomaly in causing distress has been recognized for well over a century; Cooper,[3] in 1818, recorded that he prescribed medical treatment for symptoms caused by a cervical rib, and in 1861 Coote[4] performed the first known operation for relief of pain due to this condition.

The diagnosis of cervical rib syndrome is made on the basis of a typical history, the physical findings for outlet syndrome, and the roentgenographic visualization of a cervical rib. Occasionally, the bony structure can be palpated. It should be emphasized that many cervical ribs never cause symptoms.

Scalenus Anticus Syndrome.—In 1927, Adson and Coffey[5] reported success in the treatment of cervical rib syndrome by section of the scalenus anticus muscle alone. In the mid-1930's Naffziger[6] and Ochs-

ner and co-workers[7] found that the same symptoms could be present even in the absence of a cervical rib; they suggested that these cases be classified as scalenus anticus syndrome. They also reported relief of symptoms in patients with such a condition by scalenotomy.

The diagnosis of scalenus anticus syndrome is made on the basis of a typical history and the physical findings of outlet syndrome. There may be a tenderness near the base of the neck on the affected side, and occasionally there may be evidence of hypertrophy of the scalenus muscles (fig. 3*C*). The Adson test (fig. 1*D*) should result in obliteration of the radial pulse and reproduction of the patient's symptoms.

More recently, Eaton[1a] has questioned whether primary spasm or hypertrophy in the scalenus anticus muscle can be differentiated from secondary spasm related to arthritis or a protruded disk and whether it occurs with any degree of frequency. Stammers[8] has pointed out that obliteration of the pulse in various outlet maneuvers can be found in a large percentage of normal persons. Eaton[1a] and Raaf[1b] have emphasized that there are many other causes of pressure on neurovascular structures than that of tension in the scalenus anticus muscle and that much confusion has resulted from too great reliance upon the outlet maneuvers in establishing the diagnosis of scalenus anticus syndrome and in deciding whether surgery is indicated.

Subcoracoid Pectoralis Minor Syndrome.—In 1945, Wright[9] reported that many persons developed distress from sleeping with their arms over their head, particularly when they were extremely fatigued. He noted that when these patients elevated their arms beyond 90 degrees of abduction the radial pulses were obliterated and their symptoms were reproduced. He called this condition the hyperabduction syndrome and demonstrated that it was caused by compression of the neurovascular structures as they were stretched around under the pectoralis minor muscle and the subcoracoid process when the arm was held in a hyperabducted position (fig. 3*E*).

Wright[9] has called attention to the large number of persons without symptoms in whom the radial pulse can be obliterated by the hyperabduction maneuver; in a group of 150 persons, he found that in 82% the pulse could be occluded. It is obvious then that additional criteria are necessary before the diagnosis of hyperabduction syndrome is made. In a group of 52 patients with proved hyperabduction syndrome, Beyer and Wright[2] noted the following symptoms: pain or aching in 30 (located in the hand in 27, in the arm in 7, in the shoulder in 11, and in both the shoulder and the hand in 9); numbness in 26, Raynaud's phenomenon in 20; paresthesia in 18; rubor and swelling in 12; weakness in 8; and ulcers on the finger tips in 2.

Costoclavicular Syndrome.—Falconer and Weddell[10] in 1943 became interested in the complaints of pain, numbness, congestion in the hands, and weakness in the arms that soldiers of slight build developed when they were first training to carry their packs. The authors found that vigorous shoulder exercises and several weeks of Army food and outdoor life enabled these men to tolerate their packs without trouble. Falconer and Weddell believe that the forced retraction of the shoulders due to the heavy pack caused compression of the neurovascular structures between the clavicle and the first rib (fig. 3*B*); hence, this condition was called costoclavicular syndrome.

Other Causes of Syndrome.—There are many causes of compression of neurovascular structures in the cervicodorsal outlet that have not received enough attention to be separated into distinct syndromes. Falconer and Weddell[10] have emphasized anomalies of the first thoracic rib. Raaf[1b] has described compression by a ligamentous band along the anterior border of the scalenus medius muscle, by an elongated transverse process of seventh cervical vertebra (fig. 3*D*), by a bifid insertion of the scalenus medius muscle on the first rib, and by anomalies of the arteries. Stammers[8] has found symptoms of outlet syndrome related on rare occasions to pinching of the axillary artery between two heads of the median nerve and to stretching of a post-fixed brachial plexus (i. e., one supplied by the second dorsal nerve root, a segment lower than usually occurs).

Wartenberg[11] has described a benign syndrome that he calls brachialgia statica paraesthetica in women more than 40 years of age; it consists of stiffness and paresthesia in the hands occurring during sleep. It is likely that this syndrome should be considered in the general category of outlet syndromes, although compression in the cervicodorsal outlet was not demonstrated in his series.

Treatment

For many years surgical procedures received greater emphasis than medical measures in the treatment of outlet syndrome. Various operations have been performed to relieve compression of neurovascular structures within the cervicodorsal outlet: removal of cervical rib or medial portion of clavicle, section of scalenus anticus muscle, and exploratory dissection. Unfortunately, surgery has often proved disappointing in relieving patients of their symptoms. The present trend is toward more conservative therapy, with surgical procedures being reserved for those who do not respond to a conservative program.

One reason frequently given for the failure of surgical treatment is the difficulty in establishing preoperative diagnosis because of the multiple conditions that can cause compression of the neurovascular structures. Another reason for the failure of surgical treatment is that many patients with outlet syndrome have strongly neurotic personality traits, a factor that adversely affects the results of surgery. Eaton[12] has advised against performing surgical procedures for outlet syndrome upon "tired, harassed, middle-aged women . . . (with) drooping shoulders, drooping expressions, and drooping spirits" unless objective findings are present and intensive conservative treatment has been unsuccessful.

All patients whose condition has been diagnosed as outlet syndrome should have a 4 to 12 weeks' trial of physical therapy before surgery is advised. Usually two or three treatments are given in the department of physical medicine, and the patients are instructed to continue therapy twice daily at home. Physical therapy recommended for patients with outlet syndrome consists of the application of radiant heat for 30 minutes, deep stroking and kneading massage to the neck and upper back for the purpose of relieving pain and muscle spasm, and exercises to strengthen the muscles that elevate the shoulders and that maintain good posture (particularly the erector spinae and rhomboid groups). The physical therapist stresses that the patient should hold his shoulders in a neutral position—not too high, not too low, not slumping forward or pushed backward, but just in between. Instructions for specific exercises utilized in our department are shown in figure 4.

The physician should explain to the patient the factors causing the symptoms and how the exercises are designed to correct them; he should reassure the patient that the condition is not likely to progress or cause serious disability. The patient should be warned to avoid positions or activities that aggravate his discomfort, in particular sleeping with his arms above his head. One method of preventing this position is tying a length of gauze to the wrists and fastening it to the foot of the bed, with allowance for enough slack so that the patient is able to move his arms at will to all positions except above his head. Another method of limiting movements of the arms is sewing the pajama sleeves above the elbow to the pajama coat. If the patient's occupation is an important factor aggravating symptoms, for example, painting or construction work, the physician should seriously consider advising the patient to change his work.

Under conservative management as described above, by far the majority of patients should receive significant relief. Raaf[1b] studied 117 patients having cervical rib or scalenus anticus syndrome seen over a period of 16 years and found that 83 (71%) responded favorably to conservative measures. Peet and coworkers[1c] conducted a follow-up study of 55 patients having outlet syndrome; initially, all 55 patients had sensory paresthesias, 40 had pain, 10 had muscular weakness, 20 had a positive arterial-occlusion test, and 5 had coldness, blanching, cyanosis, and edema. With a program of physical therapy and home treatment very similar to that described, 39 patients (70.9%) indicated they had experienced definite improvement. Six patients found it necessary to continue their exercises for extended periods to maintain their improvement. Twenty patients had noted relief from symptoms within 4 weeks and 13 patients within 4 to 12 weeks. Only two patients (3.6%) believed that their symptoms had become worse after treatment. Thus, when a vigorous conservative program of therapy has been undertaken in patients with outlet syndrome, surgical procedures seldom are necessary.

Summary and Conclusions

Pain, numbness, and discomfort in the shoulder and upper extremity can result from mechanical pressure upon neurovascular structures in the cervicordorsal outlet. The term cervicodorsal outlet syndrome includes the following specific conditions: cervical rib syndrome, scalenus anticus syndrome, subcoracoid pectoralis minor or hyperabduction syndrome, and costoclavicular syndrome. Outlet syndrome occurs more often in women than in men and most frequently in the third and fourth decades. Predisposing factors are developmental anomalies in the cervicodorsal outlet causing pressure on neurovascular structures, poor posture with drooping shoulders, elevation of arms above head for prolonged periods during sleep or at work, activities that force shoulders to be depressed or retracted, and anxiety tension state.

Although the outlet maneuvers (hyperabduction of the arm, forced depression and retraction of the shoulder girdle, Adson test, and Allen test) are aids

F 100-B CLEVELAND CLINIC
NECK AND SHOULDER EXERCISES

DO THE EXERCISES MARKED BY THE THERAPIST. DO EACH EXERCISE FIVE TIMES TWICE DAILY.

A. NECK EXERCISES. THESE EXERCISES SHOULD BE DONE SLOWLY WITH THE EYES CLOSED.
1. BEND HEAD FORWARD AND TOUCH CHIN TO CHEST, KEEPING MOUTH CLOSED; THEN BEND HEAD BACKWARDS. RETURN.
2. BEND HEAD SIDEWAYS FIRST TO THE RIGHT AND THEN TO THE LEFT, DIRECTING EAR TOWARD SHOULDER; KEEPING FACE STRAIGHT AHEAD.
3. TURN HEAD, FIRST TO RIGHT, THEN TO LEFT, DIRECTING CHIN TOWARD SHOULDER.
4. MOVE THE HEAD IN A CIRCLE, FIRST IN CLOCKWISE, THEN COUNTER-CLOCKWISE DIRECTION.

B. POSTURE EXERCISES FOR NECK AND SHOULDERS
1. HOLD HEAD UP, CHIN IN AND STRETCH TOP OF HEAD TOWARD CEILING. KEEP YOUR SHOULDERS BACK AND YOUR BACK STRAIGHT. SIT TALL. STAND TALL AND BE TALL AT ALL TIMES.
2. WITH BACK TO WALL AND HANDS BEHIND NECK, SWING ELBOWS FORWARD THEN BACKWARD TO TOUCH WALL. DO NOT ARCH BACK.
3. LYING FACE DOWN, RAISE HEAD AND SHOULDERS FROM THE BED. RELAX.

C. EXERCISES FOR STRENGTHENING SHOULDER ELEVATORS
STAND WITH ARMS AT SIDES HOLDING IN EACH HAND A TWO POUND WEIGHT (SANDBAGS OR JARS FILLED WITH SAND).
1. SHRUG THE SHOULDERS FORWARD AND UPWARD. RELAX.
2. SHRUG THE SHOULDERS BACKWARD AND UPWARD. RELAX.
3. SHRUG THE SHOULDERS STRAIGHT UPWARD. RELAX.
NOTE: AS STRENGTH IMPROVES AND THIS EXERCISE BECOMES EASIER, GRADUALLY INCREASE WEIGHT THAT IS LIFTED.

INCORRECT CORRECT

INCORRECT CORRECT

Fig. 4.—Specific exercises utilized for treatment of patients with cervicodorsal outlet syndrome.

in diagnosis, they should not be overemphasized in establishing the diagnosis of outlet syndrome or in deciding whether surgery is indicated.

The present trend in treatment of outlet syndrome is toward more conservative therapy, with surgical procedures being reserved for the few patients with serious involvement who do not respond to a conservative program. All patients with outlet syndrome should have a 4 to 12 weeks' trial of physical therapy, which they are instructed to carry out themselves twice daily at home, consisting of the application of radiant heat, sedative massage (when necessary to relieve pain and spasm), and exercises to strengthen the muscles that elevate the shoulders and to improve posture. They should be cautioned to avoid activities that aggravate their symptoms.

Under conservative management more than 70% of patients with outlet syndrome will receive significant relief and an additional 25% will notice no progression of symptoms. Surgical treatment should be

considered only in the small percentage of patients who have serious involvement and receive no benefit from conservative measures.

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RECURRENT MITRAL STENOSIS

DIAGNOSIS BY CATHETERIZATION OF THE LEFT SIDE OF THE HEART

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• Analysis of the results of mitral commissurotomy in 1,000 patients revealed that 22 had recurrent symptoms caused by restenosis. Six of the 22 had given evidence of clinical improvement for one or more years after the original operation but subsequently developed congestive heart failure and died; at autopsy they were found to have a severe degree of mitral stenosis due to refusion of the parts that had been separated surgically. In the other 16 reoperation was done because of the recurrence of symptoms, and direct examination of the restenosed valves was possible. Data from all 22 patients are tabulated, and six of the histories are given in some detail. Evidence of continued active rheumatic endocarditis was found in some cases. Simultaneous catheterization of right and left sides of the heart proved valuable in establishing the diagnosis of restenosis. Recent improvements in technique include a right-sided approach to the mitral valve. This permits a more complete separation of the valve elements and should reduce the incidence of restenosis.

The utilization of the surgical technique of commissurotomy for the relief of mitral stenosis is now widespread and increasing. In obtaining a high grade of functional restoration of the heart, adequate leaflet mobilization has been shown to be fundamental. Many have described the mechanical and biological elements that militate against refusion of the surgically separated commissures. Nevertheless, reports of recurrence of the obstruction to the mitral valve are beginning to appear in the world medical literature. Brock,[1] Jordan and Hellems,[2] Keyes and Lam,[3] Donzelot,[4] D'Allaines,[5] Baronofsky,[6] Soulie and co-workers,[7] and others have detailed separately one or more such cases. On the other hand, Harken and Black[8] have declared that refusion of the mitral valve is "most uncommon." Glover and co-workers[9] have stated recently that there has been no sign of recurrence of mitral stenosis in their cases after commissurotomy.

From certain theoretical and practical considerations, and from our own experience, we now feel that recurrence of mitral stenosis after surgical intervention is a relatively common development. We further believe that, in some cases, its occurrence after surgery may be predicted as probable and, in others, inevitable.

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Reestablishment of mitral value obstruction after its initial relief by surgery constitutes a recurrence of mitral stenosis, or restenosis. The difficulties and confusions attendant upon the clinical diagnosis of restenosis are obvious. They have caused us to reject for the purposes of this study all cases except those in which the diagnosis has been based on autopsy findings and those in which direct digital reexamination of the valve has been carried out at a later time by the original operating surgeon. With use of these two criteria, restenosis has accounted for at least 10%

of our late postoperative deaths and for more than one-third of those cases classified as worse on follow-up studies (table 1).

TABLE 1.—*Incidence of Restenosis Among 1,000 Patients Operated on for Mitral Stenosis as Shown by Autopsy or Reoperation**

Deaths	Cases No.	Cases %	Total
Operative	77	57	
Suicide	2	2	
Late deaths	50	37	
Due to restenosis	6	4	
Total			135
Survivors followed			
Improved	711	90	
Reoperation for restenosis	16		
Unchanged	49	6	
Worse	32	4	
Total			792
Patients not followed			73

* Longest follow-up, 8 yr.

All of the 22 patients with restenosis who are reported herein were originally (and secondarily) operated on by one of us (C. P. B.) An additional 21 patients previously operated on by surgeons at other clinics and operated on by one of us (C. P. B.) for probable restenosis have been excluded from consideration.

Early diagnosis of recurrent mitral stenosis now is possible. The recent development by Bjork [10] and Fisher and co-workers [11] of the technique of catheterization of the left side of the heart by direct transthoracic puncture of the left atrium has enabled us to determine the pressure differential between the left atrium and ventricle during left ventricular filling. Gorlin and Gorlin [12] and Goldberg and co-workers [13] have shown that, if the cardiac output is determined simultaneously by catheterization of the right side of the heart, it is possible to calculate the functional cross sectional area of the mitral valve. This affords, within practical limits, a measure of the actual extent of orificial narrowing and, hence, of the degree of restenosis, presuming always that the stenosis has been relieved at the original operation.

Evidence of Recurrent Stenosis Obtained at Autopsy

Six patients who presented evidence of clinical improvement for periods of from one to three years after mitral commissurotomy subsequently developed congestive heart failure and finally came to autopsy (table 2). In each, a severe degree of mitral stenosis was found at autopsy, with extensive refusion of the commissure or commissures that had been separated surgically. In three patients, it appeared further that certain elements of the surgically recognized valvular pathology, especially calcification, had progressed considerably between the times of operation and death.

CASE 1.—A 24-year-old male was operated on Feb. 10, 1950, at Hahnemann Hospital for mitral stenosis associated with hemoptysis, atrial fibrillation, and congestive heart failure. At operation, the left-sided approach was used and both mitral leaflets were found to be calcified. The valve slit was too small to admit a finger tip. No regurgitation was palpable. Both valve commissures were opened well with use of multiple cuts with the guillotine knife. Thereafter, good mobility of the septal leaflet was noted. A "2-finger" opening was obtained (4-6 sq. cm.); no regurgitation was created. (Since it measures essentially the linear extent of the opening and not the true area of the diastolic aperture of the valve, it is felt that the use of the terms "1 finger," "1½ fingers," "2 fingers," and so on, to indicate the size of the valve is at best only a relative approximation.) One Aschoff body was found on section of the tip of the amputated left auricular appendage. The patient was improved markedly and remained in good health for three years after the operation. His diastolic murmur was less intense, but was not abolished. Then signs and symptoms of cardiac decompensation appeared and progressively became more severe. Hemoptysis and fever developed. He became comatose and died March 12, 1954. An autopsy, performed by Dr. Oscar Auerbach (Veterans Administration Hospital, East Orange, N. J.), revealed general visceral congestion, multiple pulmonary infarcts, thrombosis of the right auricular appendage, and evidence of restenosis of the mitral valve. Both valve leaflets were heavily calcified and fused together at each extremity. The cross sectional area of the residual valve opening measured 0.75 sq. cm. There was no evident remaining mobility of the rigidly fixed valve components. There were scattered areas of fibrosis throughout the myocardium, but no Aschoff's nodules.

It would seem reasonable to believe that, in spite of reasonably adequate surgery, the stenosing lesion had progressed and that a secondary operation might have restored clinical health for at least another few years.

TABLE 2.—*Historical Data, Pathological Findings, and Change in Valve Size in Six Cases of Restenosis Determined at Autopsy*

		Operative Data					Interval Period		Autopsy Data			
Case No.	Age & Sex	Date	Valve Size Accomplished, F*	Calcification at Operation	No. of Commissures Opened	Rheumatic Findings at Biopsy of Appendage	Period of Improvement, Yr.	Interval from Operation to Death, Yr.	Date of Death	Valve Size at Autopsy	Calcification at Autopsy	Rheumatic Findings at Autopsy
1	24, M	2/10/50	2	Yes	Both	1 Aschoff nodule	3	4	3/12/54	0.75-sq.-cm. size	Yes	None
2	33, F	5/7/52	1-½	Moderate	1(anterior)	Negative	1	2.5	10/4/54	F	Marked	Aschoff bodies in myocardium
3	47, F	3/9/54	1-½	No	Both	Not done	?	0.8	1/23/55	F	No	None
4	28, M	8/4/53	1-¾	Mild	1(anterior)	Rheumatic endocarditis	1	2.0	8/22/55	0.8-cm. length	Marked	None
5	26, M	7/27/51	1-½	Yes	Anterior—to ring; posteromedial slit	Not done	3	4.3	11/16/55	F	Yes	None
6	54, F	11/24/52	1-½	Moderate	Both	Aschoff nodules	2	3.0	11/7/55	Lead pencil†	Marked	None

* Scale of approximation: F=finger tip=0.5-1.0 sq. cm.; 1 F=1.5 sq. cm.; 1-½ F=2.5-3.5 sq. cm.; 2 F=4-6 sq. cm.
† Lead pencil=0.6 sq. cm.

The finding of an Aschoff body in the auricular appendage at the time of the original operation raises the possibility of continuing rheumatic activity.

CASE 4.—A 28-year-old male was admitted to Hahnemann Hospital July 29, 1953, complaining of increasing fatigability and dizziness of nine months' duration. He had atrial fibrillation and evidence of both mitral stenosis and aortic valvular disease. On Aug. 4, 1953, a left-sided mitral commissurotomy was performed. The valve was pliable, although mild calcific infiltration

was noted over the entire septal leaflet and across the posteromedial commissure. The valve orifice was nearly competent. It would not admit a finger tip (0.5 to 1.0 sq. cm.). The anterolateral commissure was incised instrumentally three times, extending the opening to the valve ring. A 1¾-finger opening (4 sq. cm.) was established thereby, without significant alteration in the minimal regurgitation. The biopsy specimen from the auricular appendage revealed "active rheumatic endocarditis." The patient was improved for about one year. Then symptoms returned and progressed. Death occurred on Aug. 22, 1955. At postmortem examination, the mitral valve was found to be completely calcified, rigid, and stenotic. The greatest diameter of the valve opening was 0.8 cm. in length. Careful examination revealed no evidence of the previous surgery.

This is a clearly documented example of recurrence of mitral stenosis within two years of surgery. Perhaps a more adequate and especially a bicommissural mobilization of the valve would have tended to perpetuate the initially observed benefit. The extensive re-cross-fusion of the leaflets and the marked increase in valve calcification suggest the possibility of continued activity of the rheumatic process, although incomplete mobilization (only one commissure was separated) might have played the more important part in the restenosing.

Conclusions Based on Autopsy Evidence.—The six cases in which autopsy was done demonstrate that the recurrence of symptoms after a symptom-free period may be associated with a significant decrease in valve size below that established at the time of surgery. The period remaining for possible reoperation after the return of symptoms in these cases has been short, averaging roughly one year before death (table 2).

Not only was the valve orifice at autopsy greatly reduced in size in every instance but also it was clear that readherence of the surgically mobilized commissure or commissures had taken place. Extensive progression of the pathology (especially with respect to calcification of the structures) during the interval between operation and subsequent death was apparent in three cases (2, 4, and 6 in table 2).

It is noteworthy that Aschoff's bodies or other evidences of active rheumatic endocarditis were found in the resected tips of the left auricular appendage in three (cases 1, 4, and 6) of the six patients. In one of the remaining (case 2), Aschoff's nodules were found in the left ventricular myocardium at autopsy. The possibility that continuing rheumatic activity might have played a significant part in the subsequent development of restenosis in this very small group of patients is supported by the large proportion of such findings. The reported incidence of Aschoff's nodules in biopsy specimens of appendages obtained at the time of surgery at our clinic is 23.9%.[14]

TABLE 3.—*Length of Postoperative Improvement and Changes in Valve Size Between Operations in Sixteen Patients Operated on for Restenosis of the Mitral Valve*

	First Operation							Interval Between Operations, Approximate Yr.	Last Operation			
Case No.	Age & Sex	Date of First Operation	Commissures Opened	Valve Size Accomplished*	Calcification	Rheumatic Findings at Biopsy of Appendage	Period of Improvement, Yr.		Date of 2nd or 3rd	Valve Size Found*	Calcification	Final Valve Size*
7	41, F	7/27/48	1 (anterior)	1½ F	No	Negative (giant cells)	4	6	6/7/54	F	No	2 F
8	49, F†	3/19/51	1 (anterior)	2 F	No	Negative	3.5	4	1/31/55	F	Slight	1¾ F
9	23, F	2/27/50	2 (both)	2½-3 F	No	Negative	2-3	5	4/23/55	1½ F	No	1½ F
10	39, M	7/14/52	1 (anterior)	2 F	Yes	Negative	1.5	3	6/7/55	F	Yes	2½ F
11	33, F	9/25/52	1 (anterior)	1½ F	No	Aschoff nodules	1	3	8/12/55	F	No	2 plus F
12	39, F	8/28/51	1 (anterior)	1½ F	No	Negative	2	4	10/10/55	F	No	2 F
13	51, F‡	11/25/49	1 (anterior)	1½ F	No	Negative (hypertrophy)	1 3	1.5 4	7/25/51 9/21/55	F F	No Slight	2 F 2 plus F
14	43, F	3/15/51	1 (anterior)	1½ F	No	Not done	4	4.7	12/23/55	F	Moderate	2 F
15	42, F	4/14/53	1 (anterior)	1½ F	Yes	Aschoff nodules	2	3	2/6/56	6 mm. length	Marked	?
16	27, F	9/2/52	2 (anterior) Posteromedial slit	1½ F	No	Negative	2	3.5	2/21/56	F	No	2 F
17	42, F	8/23/52	1 (anterior)	1½ F	No	Negative	3	3.5	3/2/56	F	No	2 F
18	37, F‡	6/29/50	1 (anterior)	1½ F	No	Negative	0.4 4.5	0.4 5.5	11/20/50 5/21/56	1.5 cm. F	No No	1½ F 2 F
19	16, F	4/8/53	1 (anterior)	1¾ F	No	Negative	3	3.3	7/10/56	F	No	2 F
20	30, M	6/5/52	1 (anterior)	1½ F	Yes	Lymphocytic infiltration	2.5	4	7/22/56	F	Yes	2 F
21	47, F	10/27/50	2 (partial)	1½ F	Slight	Aschoff nodules	5	5.7	7/18/56	1 finger	Yes	2 plus F
22	38, F	6/30/52	1 (anterior)	1½ F	No	Aschoff nodules	3	4	8/20/56	F	No	1½ F

* For scale of approximation see table 2.
† Two operations for stenosis.
‡ Three operations for stenosis.

Evidence of Restenosis Found at Reoperation

In 16 patients, reoperation was carried out because of the return of symptoms similar to those originally associated with the mitral stenosis (table 3). Four of these patients will be reported in detail because of special features of interest. The patient in case 7 was historically the second to survive a modern type operation for mitral stenosis. The interval between her operations was six years. The patient in case 9 demonstrated extensive readherence of the commissures, despite bicommissural opening of a flexible valve to the annulus. The patient in case 13 was reoperated on twice, each time because of recurrence of signs and symptoms of mitral obstruction. Case 16 is reported in detail because it illustrates the great value of combined, simultaneous catheterization of the right and

left sides of the heart in establishing, preoperatively, the diagnosis of recurrent mitral stenosis and in demonstrating postoperatively, the improvement provided by adequate bicommissural mobilization of the valve structures.

CASE 7.—This 35-year-old female was operated on for mitral stenosis at the Episcopal Hospital on July 27, 1948, by one of us (C. P. B.). She was historically the second patient to survive the modern type operation for mitral stenosis. On May 31, 1954, she was admitted to the Hahnemann Hospital with a diagnosis of recurrent mitral stenosis. At the time of her original operation, only the anterolateral commissure of a flexible but fibrosed valve was opened (instrumentally). It was felt that a 1½-finger aperture (2.5 sq. cm.) had been achieved without the production of any insufficiency. Prior to that time she had exhibited persistent atrial flutter-fibrillation and had suffered from multiple episodes of cerebral embolization, with right hemiplegia. After this operation, she was markedly improved symptomatically and has not experienced further embolization. Four years postoperatively, in 1952, she noted diminution in her respiratory reserve and easy fatigability. Catheterization of the right side of the heart was carried out on June 4, 1954. With a cardiac output of 3.1 liters per minute, the pulmonary arterial pressure was 50/16 mm. Hg. On exercise, the output fell to 2.7 liters per minute and the pulmonary arterial pressure rose to 70/28. The pulmonary venous capillary pressure was elevated to 19 mm. Hg. These findings suggested recurrent mitral stenosis. On June 7, 1954, the patient was reoperated on from the left. Cardiac entrance was accomplished through an incision made directly into the wall of the left atrium. This wall was lined with a partially organized placenta-like clot. The valve was competent, fibrosed but flexible, and the aperture would not admit the tip of the index finger (0.5-1.0 sq. cm.). The anterolateral commissure was incised twice and then was split digitally to the valve ring. No regurgitation was produced. It was felt that a 2-finger opening with good leaflet mobility had been established. There was no subvalvular stenosis. No attempt was made to separate the posteromedial commissure. Symptomatically, the patient has been relieved completely since the operation. A normal sinus rhythm has been reestablished.

This is a clear-cut example of refusion of the separated anterolateral commissure, taking place over a six-year period. Because of technical difficulties concerned with hemostasis, which frequently are encountered in such secondary operations when performed from the left side, no attempt was made to open the posteromedial commissure.

CASE 9.—This 23-year-old female was operated on for mitral stenosis on Feb. 27, 1950. The guillotine knife was used at both fibrosed commissures. Thereafter, digital splitting sufficed to separate the valve fully to the annulus at each extremity. The posteromedial cleavage occurred suddenly and became extended well beyond the zone of adequate tendinous support, so that a severe (3 to 4+) grade of mitral insufficiency was created. It was estimated that the normal valve orifice had been lengthened by 1 cm. anteriorly and 2 cm. posteriorly to produce a 2½-to-3-finger opening.

After a stormy postoperative hospital course, the patient returned home and improved clinically. However, cardiac enlargement was progressive and ultimately was accompanied by symptoms of decompensation. She returned to the hospital in 1955 in precarious condition for repair of her mitral insufficiency. At operation on April 23, 1955, the valve opening was found to be a "finger and one-half" in size, with a 2 to 3+ regurgitation limited to the posterior portion. The anterolateral commissure had become re-fused for a distance of more than a centimeter from the annulus and now was definitely calcified. The posteromedial commissure similarly had become obliterated for a distance of 1 cm. from the annulus, but still was open for about 1 cm. beyond the posterior line of direct tendinous support. The anterior commissure was separated easily by digital pressure fully to the annulus, without any change in the regurgitation. The posterior valve leaflets were sutured together with a strip of pericardium with use of the Jamison stitcher. (This is an instrument modeled after the "looper" used in the hosiery industry. It has been described previously.[14]) The patient's condition precluded survival from the operation, however, and death occurred 12 hours postoperatively. At autopsy, no evidence of rheumatic activity was found in the myocardium.

While, strictly speaking, this woman did not undergo secondary surgery for recurrent obstruction, the evidence of refusion of both commissures after a more than adequate bicommissural separation of a completely flexible valve leaves no room for doubt that mitral stenosis sometimes may recur despite the most extensive surgical mobilization, even in patients with mild to moderate valvular pathology. The question of the role that rheumatic activity might have played in this case is unanswerable.

CASE 13.—This 51-year-old female was subjected first to commissurotomy on Nov. 25, 1949. The valve was flexible, but the orifice was finger tip in size. Only the anterior commissure was opened. There was no regurgitation before or afterward. In 1951, she began to complain of a return of shortness of breath. On July 25, 1951, she was reoperated on by one of us (C. P. B.) and the left-sided approach was used. The atrium was entered through an incision made in the left superior pulmonary vein. At this examination the septal leaflet of the valve was found to be calcified and rigid. The mural leaflet was leathery but flexible. The estimated degree of recurrent fusion of the anterior commissure was about 0.5 cm. in length. This was split apart by finger-tip pressure enlarging the aperture to 2 fingers (5 sq. cm.), without the creation of any regurgitation. Although the diastolic murmur persisted, the patient did well for about three more years. Then recurrence of symptomatology led to catheterization of the left side of the heart on Sept. 21, 1955. A mean left atrial pressure of 20 mm. Hg and a left ventricular filling gradient across the mitral valve of 11 mm. Hg was found. At reoperation for the third time on Nov. 11, 1955, at which time the right-sided approach was used, the valve was found to contain calcific particles in the region of the posteromedial commissure as well as upon the septal leaflet. The leaflet edges were generally fibrosed, and the orifice was reduced to a size that would not admit the finger tip. (It was estimated at 6 to 8 mm. in length.) Both commissures were divided instrumentally at first and then were split digitally fully to the annulus. A 1+ regurgitation was produced. At least a 2-finger opening (5+ sq. cm.), with excellent mobility of the septal leaflet, was achieved. It was felt that a much greater restoration of valve function had been accomplished than at either of the former operations. Catheterization of the left side of the heart done postoperatively confirmed her clinical improvement (table 4).

TABLE 4.—*Suggestive Evidence of Restenosis in Patient in Case 13 Immediately Prior to, and After, Her Third Operation for Mitral Stenosis**

Findings, Mm. Hg	Preoperative	Postoperative
Left atrial pressure	20	7
Left ventricular pressure	120/8	105/0
Central aortic pressure	120/70	110/64
Atrioventricular gradient	11	7

* First operation, 1949; second, 1951; third, 1955. Evidence found at catheterization of left side of heart.

This patient, who had been operated on twice previously, six and four years before, only one commissure being opened, indubitably developed a recurrence of severe mitral stenosis. In this case, the technical advantages associated with the right-sided approach to the mitral valve, which have been reported by us elsewhere,[15] permitted the performance of a much more adequate mitral commissurotomy on the third attempt when the patient was aged 57.

CASE 16.—This 27-year-old female underwent left-sided mitral commissurotomy at Hahnemann Hospital on Sept. 2, 1952. By digital pressure alone, the anterolateral commissure of a flexible valve (which originally would not admit a finger) was opened widely. Very slight opening of the posteromedial commissure was achieved. The final opening was estimated at 1½ fingers (2.5 to 3.5 sq. cm.) in size, without any regurgitation. The

TABLE 5.—*Data on Patient in Case 16 in Whom It Was Possible to Calculate Mitral Valve Area**

	Catheterization Data	2/13/56 Preop.	3/5/56 Postop.
Right side of heart	Cardiac output, liters/min.		
	Rest	3.9	3.8
	Exercise	4.8	
	Right atrial pressure, mm. Hg	5	0
	Right ventricular pressure, mm. Hg	53/5	20/0
	Pulmonary artery pressure, mm. Hg		
	Rest	50/35	18/5
	Exercise	70/46	—
	Pulmonary capillary pressure, mm. Hg	22	3
Left side of heart	Left atrial pressure, mm. Hg	25	8
	Left ventricular pressure, mm. Hg	96/0	103/8
	Aortic pressure, mm. Hg	—	—
	Brachial artery pressure, mm. Hg	130/70	—
Calculated data	Mitral gradient		
	Left atrium—left ventricle, mm. Hg	20	4
	Mitral valve flow, cc./diastolic sec.	143	226
	Mitral valve area, sq. cm.	1.0	3.6

* Note changes in the valve gradient and flow as well as in the valve area as shown above in calculated data.

biopsy specimen of the appendage revealed no evidence of active rheumatic disease. The patient was improved considerably for about two years. However, her diastolic murmur persisted. After that, there was a gradual return of fatigue, exertional dyspnea, and hemoptysis. Combined simultaneous cardiac catheterization in February, 1956, revealed that, with a resting cardiac output of 3.9 liters per minute, there was a gradient across the mitral valve during left ventricular filling of 20 mm. Hg (table 5).

Accordingly, on Feb. 16, 1956, she was reoperated on through a right-sided incision. The mitral valve was found to be leathery, without any calcific infiltration. The valve orifice would not admit the tip of the exploring finger. There was no regurgitation. The posteromedial valve commissure was split digitally without incident and a dense chordopapillary fusion mass below the valve was split almost to its ventricular insertion. The anterolateral commissure was incised twice before it would respond to digital pressure. Both valve extremities now extended practically to the annulus, and the septal leaflet was freely mobile. There was no evidence of regurgitation. Since operation, the patient again is asymptomatic. The diastolic murmur has disappeared and only a soft 1+ blowing systolic murmur is audible at the apex. Postoperative combined catheterization on March 5, 1956, revealed that, with a flow of 3.8 liters per minute, the mitral gradient had dropped from 20 to 4 mm. Hg and the calculated valve area[13] had increased from 1.0 to 3.6 sq. cm. (table 5).

The physiological data obtained on this patient not only indicated preoperatively that the stenosis had recurred but also demonstrated postoperatively the efficacy of alleviation of the obstruction by the extensive bicommissural mobilization of the valve, which is usual when the right-sided approach is used[13] (fig. 3 and 4).

Comment

In the eight and one-half years that have elapsed since the performance of the first successful modern type operation for mitral stenosis,[16] literally thousands of such procedures have been carried out in various clinics throughout the world. About 2,000 commissurotomies have been performed at Hahnemann Hospital for mitral stenosis alone. While the time that has elapsed since even the earliest of these operations is short in relation to the length of the course of rheumatic heart disease, nevertheless it now is possible to formulate certain opinions with respect to the benefit obtained therefrom. Approximately 65 to 75% of those operated on not only have been improved initially but have remained in good health up to the present time (table 1). Of this group, the first historically successful operation, on a patient (fig. 1) operated on June 10, 1948, is a happy and classic example. Although the patient was class 3, preoperatively, according to the American Heart Association functional classification, she is now class 1, with relatively slight remaining auscultatory evidence of her previous disease (fig. 1).

It is remarkable that this alleviation of symptoms and restoration to good health has been achieved by surgical techniques and accomplishments that, in retrospect, seem often to have been inadequate. For instance, with the exception of a few operators with large experience, most of the cardiac surgeons in the world today have not yet performed 100 mitral commissurotomy operations. Obviously, a goodly proportion of these procedures have been carried out while the operators were relatively inexperienced in the

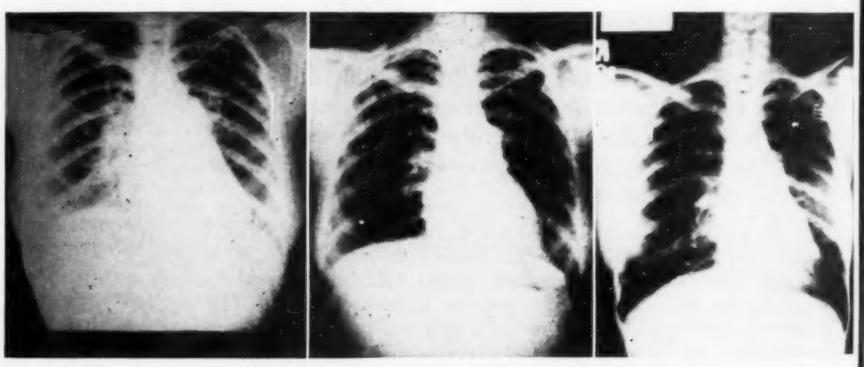

Fig. 1.—*Left*, preoperative roentgenogram of first reported patient to survive a modern type operation for mitral stenosis. *Middle*, roentgenogram six months postoperatively, showing lessening of congestion and reduction in heart size. *Right*, recent roentgenogram showing further reduction in size of heart. Patient has given birth to a son eight and a half years subsequent to commissurotomy operation. Reproduced with permission from Glover and co-workers (*Pennsylvania M. J.* **53**:375 [April] 1950).

disciplines required by these techniques. Furthermore, until very recently, the performance of these operations, which is guided and controlled entirely by the sense of touch, has been hampered by the presumed necessity for the surgeon's wearing a glove on his intracardiac finger. Only since the introduction of the bare-finger technique by Husfeldt in 1953 have we been able fully to appreciate the extent and nature of the existing valvular and subvalvular pathology and, hence, to apply disruptive digital pressure, or the cutting edge of a valvulotome, with critical accuracy.

All cardiac surgeons have complained that, with the usual left-sided approach to the mitral valve (via the left auricular appendage), one is prone to experience considerable difficulty in separating the fused leaflets in the region of the posteromedial commissure by digital pressure. Even more technical difficulty and a considerable risk of producing mitral regurgitation attend any attempt at instrumentation of this commissure. Therefore, most operators prefer to limit their instrumental manipulations to the anterolateral extremity or pole of the valve and to separate the opposite one only when it responds readily to digital pressure alone. Indeed there is a natural tendency to make a virtue out of necessity and to consider a unicommissural mobilization technically sufficient. Largely for these reasons, among the first 1,200 patients operated on at our clinic from the left side for isolated mitral stenosis, both commissures of the valve were opened in only 33.1%.[17]

In contrast to the limitations inherent in the left-sided procedure, the recent development and technical perfection of the right-sided approach to the mitral valve lends itself admirably to the routine attainment of bicommissural mobilization. Among the first 200 consecutive mitral commissurotomy procedures carried out through a right-sided thoracic incision, a considerable (although not always complete) separation of both commissures was achieved in 97.5%.[15] In the cases in which the right-sided approach was used, it has been possible to abolish the apical diastolic murmur in 60%, an end-result seldom attained with the older left-sided operation. It is our opinion now that the persistence of a mitral diastolic murmur after surgery is indicative of a degree of residual mitral stenosis.

The fundamental difference in the respective approaches is related to the diagonal placement of the left ventricle (hence the mitral valve channel) with respect to the thorax. Therefore, the left-sided approach to the mitral valve commissures can be made only with a crooked finger or with a markedly curved or angulated valvulotome, while the extended finger, or a but slightly curved instrument, may be used with the right-sided approach.

Probable Etiology of Recurrent Mitral Stenosis

We believe that the major causes of restenosis of the mitral valve after surgical mobilization may be summarized as follows: (1) smouldering latent or recurrent acute rheumatic activity; (2) incomplete surgical mobilization of the fused valve structures (including the chordopapillary supporting apparatus), which may relate either to a technical or conceptual deficiency in the surgical effort or to insuperable obstacles presented by the pathology encountered; or (3) an extreme state of valvular pathology by which the valve has been converted essentially into a fibrous (or fibrocalcific) stricture.

In view of the readiness with which acute or subacute rheumatic fever produces a stenosing lesion in a virginal mitral valve, it would seem self-evident that a continuing or recrudescent similar process (1 above) may reproduce stenosis in a valve that has been opened surgically. While the mechanical procedure conceivably (but probably rarely) may stimulate a reactivation, there is no reason to suppose that surgery is capable of suppressing or abolishing the rheumatic state.

Undoubtedly, thickened, sluggishly moving, partially adherent leaflets will tend soon to readhere. In the past, incomplete mobilization of the valve structures has been the rule rather than the exception in surgery for mitral stenosis. In part, this has been related to the existence of extreme pathological alterations, so that extensive mobilization of the valve has been difficult to achieve. However, it is felt that, with the greater experience that has been amassed in the larger clinics and with the use of the technically more advantageous

Fig. 2.—Ventricular aspect of mitral valve in extreme stenosis of the fibrous type. Note that portions of the chordae have become embedded within the thickened substance of the leaflets while the remainder help to make up complex pillar-like chordopapillary fusion masses that attach directly to the apex of the stenotic orifice. Only the most extensive valvular and subvalvular surgical mobilization can abolish the tendency to re-formation of such structures. Reproduced with permission from Bailey and co-workers (*S. Clin. North America* **31**:1821 [Dec.] 1951).

right-sided approach, a fully adequate functional restoration of the valve may be confidently expected in most cases in the future (fig. 3 and 4).

In some patients, with extremely advanced valvular pathology, the state of the structure essentially is identical both quantitatively (in its gross anatomic appearance) and qualitatively (in the microscopic presence of dense fibrous proliferation) with that of fibrous strictures of hollow organs such as may be seen elsewhere in the body. The fibrous type of mitral stenosis should be recognized as a stricture (fig. 2). It is axiomatic that after the surgical enlargement of any fibrous stricture, the stenosing process begins again. Even though an extensive surgical separation of the fused tissues may be accomplished, restenosis would seem

often to be inevitable. As the stenosis begins to recur in the mitral value operated on, the increase in the velocity of the flow of blood through the narrowed valve channel (and the trauma that it imparts) becomes an additional factor in the rate of deposition of fibrin upon the valve surfaces and of subsequent fibrous contracture of the orifice.[18]

Since many of our patients exhibit such an extensive degree of valvular pathology, recurrence of stenosis would seem to be inevitable in them after the lapse of a sufficient (and as yet undetermined) period of time, in spite of the accomplishment of the maximum conceivable technical separation of the valve structures. A less adequate surgical mobilization of the fused valve merely would permit a more rapid reestablishment of the obstruction.

Inasmuch as a full, anatomic mobilization of both valve commissures has not been possible routinely with the standard left-sided operative approach,[19] we may expect a significant number, perhaps 20% or more, of those patients who have survived a clinically satisfactory mitral commissurotomy procedure ultimately to suffer from recurrence of the mitral stenosis, which will justify a repetition of their valvular surgery.

Prevention of Restenosis

At the present time, one cannot with certainty protect the patient from continuing or recurrent rheumatic activity. It is believed that the prolonged administration of penicillin or sulfanilamide compounds, especially to patients in the younger age group, may help to ward off such an attack.[20] The preoperative

Fig. 3.—Normal mitral valve showing arc of closure. Reproduced with permission from Bailey,[14] page 491.

disclosure of a significant degree of rheumatic activity by the various serologic tests might well serve to enjoin surgical intervention during such periods in elective cases.

In all patients, however, the utmost effort must be made not only to open both valve commissures but to extend this mobilization anatomically, and fully to the natural limits, unless the prior appearance of a regurgitant jet at either or both of the commissures interdicts such extreme leaflet separation. It should be understood that the surgical separation may extend somewhat beyond the anatomic limits of the normal valve opening. Any subvalvular secondary obstruction due to chordopapillary change or cross fusion must be separated. Even in very scarred valves with severe stenosis, a sufficiently wide freeing up of both valve extremities often will provide free "hinging" of the septal leaflet upon its more flexible basal substance, thus destroying the semblance of the valve to a fibrous

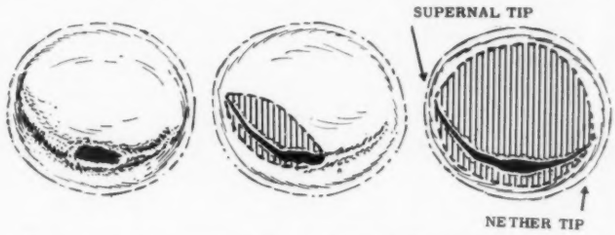

Fig. 4.—*Left*, representation of usual diminutive orificial slit found at operation for mitral stenosis (patient in the supine position). This represents a small segment of the normally nearly semicircular arc of closure during systole (as shown in figure 3). *Middle*, unicommissural separation of anterolateral (left) extremity of the valve, which is the usual accomplishment of surgery through the customary left-sided approach for mitral stenosis. Dotted lines reveal the maximal theoretical valve opening during diastole. Such eccentric movement of the leaflets may be hampered or limited by remaining fibrous or horseshoe-like calcification of the posteromedial (right) commissure. *Right*, resemblance of the extensively mobilized mitral valve (including the subvalvular supporting structures) to the "horned moon" of the "Ancient Mariner" after full opening of the "nether" and "supernal" tips. Dotted lines indicate maximal diastolic area, provided usual amount of flexibility remains at base of septal leaflets. This is the type of valve mobilization customarily achieved with the more advantageous right-sided approach to the mitral valve.

stricture. The fully mobilized valve will resemble the "horned moon" of the "Ancient Mariner," if the "nether tip" (posteromedial commissure) as well as the anterolateral commissure has been fully opened (fig. 3 and 4).

Only after the septal leaflet has been demonstrated to move freely in response to the hydrodynamic stresses natural to this portion of the circulatory apparatus can the operator feel that he has accomplished his mission. Such fully mobilized and functioning valves should exhibit relatively little tendency toward re-formation of the stenosis. In order to facilitate the accomplishment of this objective, we have come to utilize the right-sided approach to the mitral valve routinely. We do not believe any other surgical approach affords equivalent technical advantages.[15]

Treatment of Recurrent Mitral Stenosis

Once restenosis of the valve has been demonstrated (most reliably by combined heart catheterization) reoperation obviously is indicated, if the patient's condition will permit it. An additional advantage of the right-sided approach is that the operation can be performed through a "virginal" right pleural space. By use of this approach, the valve usually can be opened completely and mobilized fully at both commissures.

Summary and Conclusions

Restenosis has been shown to be a common and eventually fatal late complication after clinically satisfactory mitral commissurotomy. Its appearance is re-

lated (1) to the rheumatic nature of the causative disease, (2) to the frequent inadequacy of surgical techniques customarily used, and (3) to the occasional extreme pathological deformation of the valve, which may prevent an adequate separation of the leaflets or which may amount to its transformation into a fibrous stricture.

Six cases of recurrent mitral stenosis in which autopsy was done and 16 in which reoperation was carried out were presented. The fact that so few cases of this type have been reported to date may be explained by the short period of time that has elapsed since this type of surgery has been undertaken, and by the failure of the profession to look for the condition in patients who are not doing well after operation. In our own experience, over 10% of our late deaths and one-third of those cases in which patients were classified as "worse" have been proved to be due to restenosis of the valve.

Combined catheterization of the left and right sides of the heart is recommended as a safe and logical procedure for the diagnosis of mitral stenosis not only prior to surgery but at any time thereafter. The proved existence of mitral obstruction constitutes an adequate indication for mitral commissurotomy whether or not a similar operation has been carried out on the patient in the past. For technical reasons it is urged that the right-sided approach be used for the performance of mitral commissurotomy, either initially or secondarily, in order to achieve a superior type of bicommissural mobilization.

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INTRODUCTORY COMMENTS ON GRADUATE EDUCATION FOR GENERAL PRACTICE

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• The problem of graduate education for general practice needs to be discussed thoroughly. There is constant pressure for the hasty adoption of particular policies based on different, sometimes discordant, assumptions. Stereotyping in the present state of our knowledge would be unsound and could do much harm. The free exchange of facts and opinions in conference is necessary for the development of a realistic and constructive program.

During the three half-day sessions of the 53rd Annual Congress on Medical Education and Licensure, for which the Council on Medical Education and Hospitals is responsible or has been co-sponsor, attention was focused on important challenges or problems in each of the major areas of medical education. The first session centered on consideration of one of the controversial aspects of graduate medical education on which serious study and subsequent logical conclusions and action have been sorely needed for some time. The second session was concerned with some of the basic underlying problems

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associated with the current unrest in undergraduate medical education as we grapple with the challenges of preparation for the long road ahead. The final session dealt with the challenges presented by, as well as the importance of, postgraduate medical education, with examples given of successful efforts in this field.

Challenges are not met nor are issues solved by avoidance or through the creation of compromises that in themselves may be designed to perpetuate rather than to answer them. If progress is to be made toward improving understanding and a better solution to some of our pressing problems in medical education and practice, it is important that these problems be studied objectively. As a matter of fact, we can well be guided by Conant's little comment, "Behold the turtle. He only makes progress when he sticks his neck out." In each of these areas of medical education the council and the co-sponsors have "stuck their necks out" as to the kind of challenges and problems felt to be deserving of consideration at this time.

The Conference on Graduate Education for General Practice–1957 has been developed because of the belief that this area presents challenges and problems deserving of serious objective study. Too frequently the concept of general practice in the minds of many practitioners and large segments of the public is that of a half-century ago and not in keeping with the realities of today. This fact alone would make serious discussion worthwhile.

However, there are many other facets of this matter that are of vital importance in the field of medical education and that are of serious import to medical care. The House of Delegates and the Council on Medical Education and Hospitals of the American Medical Association are confronted with resolutions at every session directing attention to and requesting action of one kind or another in regard to education for general practice. Some of these resolutions have been carefully prepared in an effort to be objective and have been directed toward suitable study and eventual recommendations for action. Some are presented as holding specific answers to all of the problems, such as the proposal for the establishment of departments of general practice in all medical schools or the advisability of an experience in general practice as the only sound approach prior to specialization. Others are directed toward the universal requirement of rotating internships with the abolition of straight internships. Occasional implications are included signifying that the art of medicine can be learned in no other way than through the medium of general practice; this raises a real question as to what we mean in medicine when the term "art" is utilized. If we accept "art" to be the "systematic application of knowledge or skill in effecting a desired result" as Webster so aptly defines the term, then our course should not be difficult to steer.

Innumerable articles written by general practitioners in lay magazines during recent years have been directed toward impressing the public with the idea that only general practitioners are qualified to really understand people or render proper family care. Such misrepresentations of fact are not in the best interests of either the public or the medical profession, even though they may make good stories for the press. We are all physicians first and should together be striving toward the improvement of medical education and medical care in the best interests of the public whom we all serve.

Although many other examples could be given, these should suffice to indicate that there is a genuine challenge here that requires frank and objective analysis. Throughout many of the resolutions and actions that have been suggested, there constantly appears to run a theme that carries the implication of a desire for stereotyping, which in this stage of our knowledge is little less than alarming. In other words, there are pressures to stereotype background preparation for a field of activity that frequently is still being defined in terms of the past rather than in terms of today and for the period ahead. This is not realistic, and it is time we frankly admit such to be the case.

With knowledge applicable to medicine accumulating with ever increasing rapidity, it is not possible for any individual to encompass more than a fraction of the over-all field. We are living and working in 1957 and should be planning for the future in the light of needs as we can best project them today. In planning programs for the education of physicians, it is important that they be designed in keeping with current needs and those visualized ahead. What is the best type of educational and training experience for the individual who does not desire to restrict his interests to one of the recognized specialty fields? There is need for positive projection as to what such a physician should be prepared to do and how he can best be prepared to do it. Rather than think in terms of what the general practitioner or family physician should not do, it is time to get our thinking oriented positively as to what he should be prepared to do. In suggesting such an approach, I am not talking about suddenly changing the rights or prerogatives of those who have gone into the practice of medicine in the past, but rather I am endeavoring to direct attention on the development of a realistic and constructive program in the future.

The council and its co-sponsors sincerely hope that these conferences will serve as useful mediums for the presentation of points of view that will be valuable in the pursuit of their studies and also be valuable to the visitors and participants at this 53rd Annual Congress on Medical Education and Licensure. Some of the ideas propounded at this congress should be of great value to the studies that have recently been initiated on the best background preparation for general practice by a committee representing the council, the Association of American Medical Colleges, and the American Academy of General Practice and including also, in the future, specialty area representatives.

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ROLE OF UNDERGRADUATE MEDICAL EDUCATION IN PREPARATION FOR GRADUATE EDUCATION

E. Hugh Luckey, M.D., New York

• *The four years of medical school should constitute an experience that is the best possible preparation for all types of professional careers in medicine. No penalty should be imposed on the student who ultimately chooses private practice in either general or restricted fields, a career in research and teaching, or a position in medical administration. The four short undergraduate years should be reserved for experiences not easily obtainable after graduation. It is therefore questioned whether extramural preceptorships are desirable during those years and whether general practice can be thought of as an academic discipline about which medical school departments should be organized. The extension of university influence into our medical schools has resulted in important developments. Some recent trends must be deprecated as tending to repeat errors of the past and to weaken the relationship between universities and their medical schools.*

As we meet in 1957 to consider problems of education for general practice, we are primarily concerned with graduate education or intern and residency training. This is quite proper, for it is during this phase of a physician's training that he begins to orient himself toward the type of practice he will pursue. We must remember, however, that the effectiveness of graduate education depends largely on the form that undergraduate education takes. Actually, though, these two phases of the education of today's physician occupy less than one-fifth of his professional lifetime. Of even more importance in assuring the doctor's lasting effectiveness is his continuing education throughout the major portion of his professional career. These three phases are interdependent, but it is my responsibility to consider the importance of the four undergraduate years in the education of the physician.

Changes in Medical Education

It is particularly important to note that we are talking about education for general practice in 1957. It seems to me that many of our problems in discussing matters of medical education arise from the great differences in the medical school experiences of different doctors. For example, the graduate of 1925 would surely insist on the importance of a rotating internship for medical school graduates. Since effective, well-organized undergraduate clinical clerkships were not generally a part of the curriculum 30 years ago, such an experience was important in 1925. Today, however, all medical schools require their undergraduates to take clinical clerkships. These represent educational experiences superior in most, if not in all, respects to the rotating internships of the past. This factor modifies the requirements of the internship experience for today's graduates.

Thus, an important cause for our difficulties is failure to recognize that medical education has undergone major changes over the last 40 years. Forty years ago, the majority of medical school graduates began to practice immediately after graduation or after one year of rotating internship. Recent studies indicate that in the class of 1945 the average graduate training period was four years. In that class, approximately 20% of the graduates elected to undertake general practice, and of this group one-third had residency training. Five per cent elected general practice with special attention to a special area; of this group two-thirds had some residency training. The remainder, or nearly 75%, limited their practice to a specialty, and practically all had extensive residency training. When he is graduated today, the young physician can look forward to four more years as intern and resident. We often fail to recognize that the doctor entering practice in 1957 began his undergraduate medical education in 1947—10 years before. Further, the students entering our medical schools in the fall of 1957 will not begin private practice until 1967—10 years hence.

These bare facts about certain changes in medical education bring to our attention a primary responsibility of all who are concerned with medical education. This is to bear in mind that the undergraduate medical program of today will determine to a considerable extent the type of physician who enters the practice of the profession in 1967. It is not enough merely to keep pace with the healthy trends in medical service to the people. We must help to mold and guide these trends, and we must do what we can to correct any unhealthy development.

It is not my purpose to try to predict the patterns of medical practice and the responsibilities of physicians in 1967. This sort of speculation is stimulating and, within certain limits, possible. One study illustrates the kinds of information most valuable in making such predictions. In a study of trends toward partnerships and groups, Weiskotten and Altenderfer found that of those doctors graduated in 1935 only 12% are now members of partnerships or groups. Of those who were graduated in 1945, however, more than 35% are in combined practice today. Certainly, rapid and important changes are taking place in medical economics and in the responsibilities of physicians to their patients. I believe that the precious personal relationship between a patient and his doctor will remain intact. Nevertheless, there is good reason to accept the fact that the organizational structure of medical services within which the physician practices will continue to change. These important factors must be considered in any evaluation of the future of undergraduate medical education.

Dean, Cornell University Medical College.

Read before the 53rd Annual Congress on Medical Education and Licensure, Chicago, Feb. 10, 1957.

I have been asked to express some personal opinions regarding the role that undergraduate medical education plays in preparing the physician for his graduate training. My theme will be that the four years of medical school should constitute an experience that is the best possible preparation for all types of professional careers in medicine. This experience should prepare the physician for any kind of professional career; it should not be directed primarily toward training for any particular type of practice. No penalty should be imposed on the student who ultimately chooses private practice in either general or restricted fields, a career in research and teaching, or a position in medical administration. Although we may not be doing the best we can in undergraduate medical education today, I think that these basic requirements are being met in the experience provided by the modern medical school.

Objectives of Medical Education

The objectives of undergraduate medical education have been the subject of careful study by numerous groups. Perhaps the most comprehensive statement is that prepared by the Association of American Medical Colleges. This statement has had the attention of many individuals and, although revised eight times, is still considered under development and subject to further revision. The introductory statement says:

> Undergraduate medical education must provide a solid foundation for the future physician's development. It should not aim at presenting the complete, detailed, systematic body of knowledge concerning each and every medical and related discipline. Rather, it must provide the setting in which the student can learn fundamental principles applicable to the whole body of medical knowledge, establish habits of reasoned and critical judgment of evidence and experience, and develop an ability to use these principles and judgments wisely in solving problems of health and disease.
>
> Undergraduate medical education cannot achieve these aims if the student is relegated to a passive role. It must provide incentive for active learning on the part of the student. This can best be done by giving him definite responsibility in real, day-to-day problems of health and disease. This responsibility must, of course, be carefully graded to the student's ability and experience and must be exercised under careful guidance by the faculty.
>
> Given incentive to learn and guidance toward the grasp of principles, with the problems of health and disease as a frame of reference, the student will build the necessary foundation for his career in medicine, be it practice (general or limited), teaching, research, or administration.
>
> In working toward this fundamental objective, undergraduate medical schools must strive to help the student to: acquire basic professional knowledge; establish essential habits; attain clinical and social skills necessary to the best utilization of that knowledge; and develop those basic intellectual attitudes and ethical and moral principles which are essential if he is to gain and maintain the confidence and trust of those whom he treats, the respect of those with whom he works, and the support of the community in which he lives.
>
> These five aims are obviously not distinctly separable, but are mutually interdependent. All together they summarize the desirable characteristics of the responsible professional person medical education is attempting to produce.

The form and content of the curriculums of today's medical schools have been under criticism by many different groups. In my opinion, the unrest or ferment produced by these attacks has been a healthy influence. It has led to a searching study of our objectives and to more realistic evaluation of the methods of reaching these goals. A fanatic has been described as one who, having lost sight of his objectives, redoubles his efforts. If we were to lose sight of our objectives, we could, like the fanatic, futilely redouble the courses and varied educational experiences in the medical school curriculum. In the face of continuing pressures from various groups to establish new departments in our medical schools, we are often reminded of the origin of the word school. According to Alan Gregg, school is derived from the Greek word *schole*, meaning leisure or a time for reflection. The store of basic medical scientific knowledge is so great today and is increasing so constantly and rapidly that it would not be possible to give our students a comprehensive view of these fields even if all four years of medical school were reserved for this purpose. However, these suggestions for new departments to serve special interests and purposes have stimulated rededication to our objectives and serious study of the curriculum. Many interesting experiments in education have evolved from these studies.

One of the most important results of such studies has been the recognition of the fact that there is no such thing as "the" curriculum of medical schools in the United States. There are as many different curriculums as there are medical schools. And even if total hours, sequences of courses, and stated content did not vary so strikingly, we know that the actual experience at each institution would differ markedly because of the unique character of each student and each teacher. However, the most interesting and instructive aspect of these observations is that, despite such varied conditions and environments, the opportunity for good medical education is available in our medical schools today.

Scientific Versus Practical Medicine

Out of these studies of the curriculum and out of these experiments in medical education, an old controversy has reared its head. This is the dispute between proponents of scientific and the advocates of so-called practical medicine. The controversy dates back at least to 1849 when Rudolf Virchow wrote in volume 1 of the *Archiv für Pathologische Anatomie*: "The gap between scientific and practical medicine is so great that one can say the scientific physician does not know how to practice, and that the practical physician knows nothing of science. . . . This gap between science and practice is relatively new; our century and our country have produced it."

Much of our effort in medical education during the past century has been concerned with closing this gap. Again, in 1927, Francis Weld Peabody in an address entitled "The Care of the Patient" said: "Whenever the lay public stops criticizing the type of modern doctor, the medical profession itself may be counted on to stir up the stagnant pool. The most common criticism made at present by older practitioners is that young graduates have been taught a great deal about the mechanisms of disease, but very little

about the practice of medicine—or to put it more bluntly, (it is said), they are too 'scientific' and do not know how to take care of patients."

It is difficult to believe that any rational person would fail to associate the enormous advances in medicine of the last 40 years with the increased knowledge of the natural and physical sciences and the application of this knowledge to the understanding of human biology and control of disease. In view of this, there is no question that basic medical education must be centered primarily around the acquisition of a reasonable and balanced portion of this basic science, its methodology, and its application to human disease. Even so, it must be recognized that the great majority of human diseases cannot now be explained satisfactorily through information that meets the strict requirements of natural and physical science. Samuel Butler is given credit for the statement that "one of the arts of living consists in the ability to come to adequate conclusions from inadequate evidence." One of our responsibilities in undergraduate medical education is to foster the development of a similar art in our students. The weighing of evidence in illness requires an understanding of the fact that we are dealing with degrees of probability short of certainty and that we must make adequate decisions from inadequate evidence. This aspect of the education of a physician has been called "training in uncertainty."

A number of the recent experiments in medical education have been the subject of considerable debate. These have included the emphasis on the "whole" patient and its counterpart, comprehensive care; "psychosomatic" medical programs; attempts to explore the contributions of the sociologist in teaching, research, and patient care; and various interdepartmental integrated teaching programs. In certain quarters some of these programs have received enthusiastic but premature acceptance long before the experiment is completed. In others, they have been derisively described as a "back to nature" movement and even antiscientific.

Much of the recent experimentation in medical education has centered about various social aspects of human illness. It is clear that most of the information about this phase of human ecology is sketchy and poorly understood. As is the case with all areas of interest that have not yet developed a definite body of information subject to experimental proof, investigation in these fields is hindered by many obstacles. Similarly, instruction in these subjects must be most inexact. Can the present diffuse information about social aspects of human illness be formulated into an organized body of information subject to scientific verification? No one knows. Nevertheless, this sort of experimentation is most certainly the responsibility of our medical schools as members of university families and should receive every encouragement. Can such programs be maintained in the regular curriculum of a medical school without significant impairment of the programs in research and teaching of anatomic and chemical pathology? This is not yet known.

I should like to comment further on the various pressures brought to bear on our medical schools to alter curriculums in favor of special interests. The number of such suggestions is great. One such suggestion that I should like to mention specifically is that each of our medical schools should establish a department of general practice.

When this suggestion was made, a number of very perplexing questions were raised in our medical schools. What would be the responsibility of such a department? How would this department differ from the departments of medicine found in each of our medical schools? In most of our medical schools, departments are organized along academic disciplinary lines. Is general practice such a discipline? Is it not, rather, one of the most complex types of practice of our profession, requiring considerable knowledge of each of the disciplines now represented in our medical school departments? If departments are to be organized without justification as academic disciplines, what other interests would deserve departmental status? What are the responsibilities of a general practitioner today? Do not his tasks and responsibilities vary greatly in different parts of the country? But more important, how will the generalist of 1967 differ from his counterpart today? Many of these questions we find difficult to answer.

In partial response to the pressures to orient students toward general practices, a number of medical schools have organized or reinforced extramural preceptorships, with students spending a number of months working in the private offices of selected doctors in the area. It does seem desirable to have our students become familiar with the organization of medical services in our country at some point in their undergraduate years. However, it seems appropriate to question the necessity of the extramural preceptorship for this purpose. The four short undergraduate years should be reserved for those experiences not easily obtainable after graduation.

The Medical School Within the University

Finally, I should like to emphasize the tenuous position of the medical school in our American university family. With the possible exception of the football team, no other unit of a university is subject to more abuse or is the cause of such administrative strife. The integration of the majority of medical schools into universities is a relatively new development in the United States. In an attempt to improve the standards of medical education, the American Medical Association played an important part in the extension of university influence into our medical schools in the early part of this century. As a result of the developments in medical research and teaching made possible through this influence, the state of our nation's health has advanced enormously. Certain recent trends to restore educational practices that were widespread before the turn of the century and to alter the relationship between universities and their medical schools recall a quotation from Santayana: "He who is disposed to ignore history must be prepared to repeat it."

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GRADUATE TRAINING FOR THE GENERAL PRACTICE OF MEDICINE TODAY

William B. Hildebrand, M.D., Menasha, Wis.

• *Medical educators and medical schools should take the initiative in providing two-and-three-year well-rounded internship-residency programs for those who desire them in general practice. Such programs should develop clinical judgment, bring realization of limitations as well as capabilities, create a sacred sense of ethical and moral responsibility, and add a quality of professional maturity. Restriction of hospital opportunities to doctors certified by boards is unjust and discriminatory. The general resident should be accorded the same prestige and dignity as is given to residents in any other medical field.*

In recent years, particularly after the end of World War II, a belief developed that the general practice of medicine was soon to become a thing of the past. Some said general practice was good, that is, what there was of it and while it lasted, but rapid advances in scientific knowledge and technological fields would not allow the generalist to continue long on the medical scene. His place would and should be taken by board certified specialists.

Such an attitude and belief, I am sorry to say, was cultivated and nurtured, both publicly and privately, by those from within the medical profession as well as those from without. Suddenly it became fashionable, as well as profitable, for a writer to go on at length, in both lay and professional publications, exposing the so-called evils of medicine, laying most of the difficulty at the feet of the generalist.

Doubt began to creep into the minds of the consuming medical public as to what was really the best type of doctor. One began to hear such expressions as "This is the era of specialization in medicine," "Some day we will have a doctor for each part of us," "The personal medical care of yesterday is gone," "The internist is the general practitioner of tomorrow," "The generalist is the family doctor of today," and "We must consider the patient as a whole." Now the variety, number, and contradictory tone of these and similar statements meant that something had gone wrong with the philosophy of medicine. It meant that specialists are very necessary in the demanding discipline of modern medical care. It also meant—when boiled down to fundamentals—that when one is ill he wants primarily to have a doctor at his side who will "see him through" and who will consider the economic, social, and emotional side of his illness as well as the pathology of the tissues involved. How to reconcile these two basic tenets has been and still is one of the foremost challenges to the medical profession.

One who lies ill with a brain tumor might want his family doctor to care for him, but we all know that a neurosurgeon can perform this task much more skillfully. Such a dichotomy between generalists and specialists, according to Dr. Charles S. Davidson,[1] has resulted in much heated discussion and has given rise to many of the clichés mentioned above.

If we, within the profession, who are concerned with the problems involving generalists and specialists, will compel ourselves to analyze the situation dispassionately, objectively, and unemotionally, only one conclusion can be reached. There always has been—and, in the future, will be—a need in medicine for the personal type of approach given by a generalist. Patients want that type of medical approach, and all the indications are that the expected demise of the generalist and the practice of general medicine has not come to pass—in fact, the reverse is true. We are seeing a renaissance and a resurgent interest in general practice by many young physicians.

Former President, American Academy of General Practice.

Read before the 53rd Annual Congress on Medical Education and Licensure, Chicago, Feb. 10, 1957.

Importance of the General Practitioner

There are several reasons for my making this statement. First, in cities with less than 10,000 population (12,829 communities), general practitioners constitute 72% of all physicians in active practice. An additional 17% classify themselves as part-time specialists, who are, in reality, general practitioners. Thus the above figure of 72% is raised to 89%. Second, in cities of 100,000 or more, 40% of all active private practitioners are general practitioners, and an additional 12% are part-time specialists, thus making a total of 52%. Third, over the entire nation, 64% of all physicians in active practice are either general practitioners or part-time specialists doing general practice. The latest figures available show that in 1955 there were 85,191 general practitioners and part-time specialists in active practice in the United States and 67,114 full-time specialists. The above figures are from the Medical Economics Bureau of Research of the American Medical Association.

Such data would indicate that the generalist and general practice are and will continue to be the major numerical components of the medical scene. The corollary of this statement can only be that the generalist and part-time specialist must, of necessity, be responsible for dispensing the major portion of medical care to the American people. Another corollary to this statement must be obvious, namely, that, if the present standards of medical care in the United States are to be elevated or even maintained, such a circumstance must come about by providing greater opportunities in graduate medical education for those interested in and entering the field of general medicine and, in addition, by insuring that these young doctors take full advantage of such opportunities.

A few more facts and figures might aid us in developing a greater insight into the necessity for more graduate education for the generalist. In 1915 the

population of the United States was 100 million; in 1946 it had risen to 141 million; in 1956 it was 170 million; and at the present rates of increase, in 1975 the population will be 221 million.

In 1939 there were 137,688 private practitioners, specialists, part-time specialists, and general practitioners in the United States. In 1955, 16 years later, this figure had risen to only 152,305, an increase of about 14,000 during the 16-year period, while the population had risen by about 40 million. At the present time there is approximately one private practitioner for every 1,116 people in the United States. If this same ratio holds true for the expected rise in population, by 1975 we will need 189,000 physicians in private practice. Likewise, if our present percentage of general practitioners, part-time specialists, and full-time specialists holds true—and there is every indication that it will—the United States will need approximately 125,000 general practitioners to fill the medical needs of our nation.

Although I have no data available, I seriously doubt that the number of graduates coming from our medical schools, even with larger classes and more four-year schools being built, will be adequate in 1975. This I say in spite of the fact that the tremendous changes in medical practice wrought by the introduction of the so-called wonder drugs, the expanded use of auxiliary personnel by physicians, and the increase in the percentage of patients treated in the office and hospital rather than in the home have combined to greatly increase the technological efficiency and capacity of all private physicians. If we reduce this statement to general economic terms, we might say that the productive capacity of the individual physician has been enlarged by improvement and increases in knowledge, personnel, and equipment and by changes in the buying habits of his customers.

This, of course, means a greater patient load for the physician—be he specialist or generalist. If the physician is to render the best care to his patients, he must be adequately equipped and trained. I say without any reservation that a one-year internship does not provide that type of training, not only that which is desirous but that which is fundamentally necessary to provide the care demanded and deserved by the increased patient load of today and tomorrow.

Definition of Generalist

It might be well here to try and define a general practitioner or generalist. The American Academy of General Practice has been wrestling with the problem of developing a definition of a generalist since its founding. The only one that has ever been adopted is the one appearing in the academy's "Manual on General Practice Departments in Hospitals." This is as follows:

> A general practitioner is a legally qualified doctor of medicine who does not limit his practice to a particular field of medicine or surgery. In his general capacity as personal physician and family medical advisor, he may, however, devote particular attention to one or more special fields, recognizing at the same time the need for consulting with qualified specialists when a medical situation exceeds the capacities of his own training or experience.

Let us consider what happens after graduation from medical school to a general practitioner who is filled with a genuine feeling of compassion for his fellow men, is a good student, possesses an unusual ability to get along with people, and is motivated by a deep, sincere interest in mankind. He chooses a one-year rotating internship and, at the end of that period, enters private practice in a community to his liking. Now, if this young man is sincere in his self-analysis, in a few years he will find himself emerging into one of three prototypes. Let us classify as examples of the first prototype those general practitioners who become possessed of what might be labeled "honest humiliation." By this I mean that the young generalist realizes that his training is inadequate in many fields of medicine and that he is compelled by his own conscience to refer most of his patients to specialists. He becomes frustrated and either settles back, doing only a very limited type of general medicine, and vegetates, or he goes back to a hospital for training in a specialty.

The second type of general practitioner who emerges after a few years becomes possessed of a personality trait that we might call "hypocritical arrogance." He does not realize his own limitations and capabilities, often attempting procedures in his office or even in a hospital to the detriment of his patient and the embarrassment of his colleagues. This type constitutes a very small minority, I am happy to report.

The third type constitutes by far the largest majority and consists of those dedicated family doctors who practice medicine to the full extent of their physical and professional capabilities in the home, the office, and the hospital. They take full advantage of postgraduate educational opportunities and are members of and active in medical organizations. However, most of these men are limited by the fact that their graduate educational experience has been a one-year internship. In too many instances, this internship has been in a private hospital, where opportunities for actually doing things in medicine are limited. Adequate graduate training before entering general practice would improve the philosophies of all these types.

As has been said, too many general practitioners are entering the private practice of medicine after a one-year internship. Of the private practitioners of medicine in the United States, 62% are dispensing general medical care. If standards of medical care are to be maintained or elevated, greater opportunities for further graduate training in general practice must be provided and utilized.

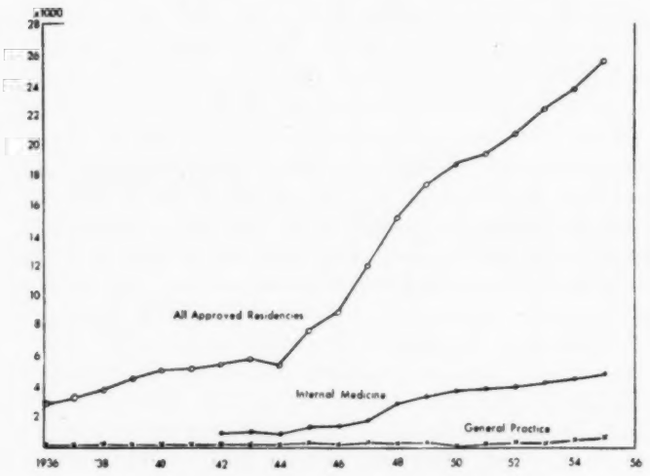
General Practice Residencies

For the first time, the 1950 annual report of the Council on Medical Education and Hospitals listed general practice residencies. These were formerly called "mixed residencies." In 1952, 30 such programs were listed, numbering 155 positions. This constituted only 0.5% of the 19,364 approved residencies of all types (see figure). In spite of many meetings of combined committees of the American Medical Association, the Council on Medical Education and Hospitals, and the American Academy of General Practice, by 1956 only 669, or 2.5%, of the 27,835

approved residencies of all types were in general practice. In other words, 2.5% of the approved residencies are expected today to give graduate training to 62% of the private practitioners in the United States.

Almost twice as many doctors are taking residencies in anesthesia as in general practice, and the same is true in pathology and radiology. Almost three times as many are training for pediatrics, for psychiatry, and for obstetrics and gynecology. Six times as many are preparing for careers in internal medicine and seven times as many for surgery. Such figures are almost incomprehensible and are lamentable. Generalists are entitled to adequate residency training in the same manner and with the same consideration as are specialists. A further condemnation of the program is the sad commentary on the percentage of these residencies that are filled. In 1955 only 66% of the positions were utilized, and many of these were filled by alien physicians.

The number of general practice residencies available today is far too few; from the degree of participation, it would indicate that many of these positions



Number of residencies from 1936 to 1956.

leave much to be desired in providing an adequate graduate educational experience in preparation for general practice. How to cope with these deficiencies is a problem for all facets of medicine to solve, but particularly for medical schools and medical educators.

The young physician who enters general practice should do so because of a genuine desire to perform that kind of medical service, but he must be adequately trained. No physician should go into general medicine simply because he does not have the time, money, or desire to prolong his training for a specialty. The internship no longer serves as sufficient experience by which any doctor can acquire adequate skills in the application of medical theory to techniques. Any physician entering general practice should have a residency available to him that will satisfy his need for advanced medical education, thus allowing him to enter into practice on a professional par with his colleague who elected a narrow specialty.

Adequate Graduate Training

The first graduate year should consist of a well-rounded rotating internship. The American Medical Association approves of rotating internships and disapproves of the straight internships in general; however, it does approve straight internships for medicine, surgery, pediatrics, and pathology. We see today numerous examples of board-certified surgeons practicing general medicine without any experience at all in obstetrics, medicine, or pediatrics. We also see internists practicing general medicine without experience at all in pediatrics, contagious diseases, or traumatic surgery, these internists having taken a straight internship and residency in medicine. Such men are as unqualified for general practice as a generalist without surgical experience is unqualified for abdominal surgery.

General Residency.—The minimum period of general residency training should be two years, with a third year optional for those who desire further training in a particular field. A recent survey, yet unpublished, shows that in six states 80% of all surgery is being done by general practitioners. Therefore I feel that if such is to be, residency programs should offer a third year in surgery should the applicant elect to take it. I am certain that this statement will be challenged by many; but let those who do so realize that by far the majority of those men highly trained in surgical specialties are not available in small hospitals and that anyone who accepts and meets the surgical responsibilities of a community has only himself to depend upon.

Because general practice is not a well-defined field but varies with the desires, location, temperament, and aptitude of the physician involved, the residency must of necessity be flexible and permit the resident a certain latitude in his choice of services.

First Year.—The first year of any residency program should consist of services in all of general medical fields, with emphasis in general medicine, pediatrics, and psychiatry. Training in general medicine should be the most valuable part of the residency, whether the generalist expects to be a type of internist-pediatrician who acts as a personal medical advisor or whether he expects to do everything he can in the field of medicine. All surgical illnesses have medical components, and, the more general medicine a physician knows, the better equipped he will be, for example, to see disturbances in physiology, metabolism, and nutrition in his surgical patients. This is true whether the doctor in question is a general surgeon with board certification or a general practitioner whose relationship with surgery is confined to diagnosis and preoperative and postoperative care.

Second Year.—The second year of the program should include experience that will allow the generalist to handle the average traumatic problems arising in his practice. Certainly, the office or outpatient department management of common diseases and injuries to the eye, ear, nose, and throat should receive em-

phasis. The residency should provide experience in emergency room service, management of fractures of an uncomplicated nature, minor surgery of all parts of the body, and office management of gynecologic and urologic procedures. It should also emphasize preoperative and postoperative care and surgical diagnosis, and the young doctor should be allowed the opportunity of assisting at or with, as well as performing, as much surgery as is possible. Such training does not mean performing highly specialized or difficult procedures and techniques that are of an advanced nature.

Obstetric training should also be provided to the degree of insuring that the physician will be able to handle all phases of normal obstetrics and that he will have the ability to recognize major obstetric emergencies and complications. He should have witnessed and assisted with, as many times as possible, the management of such complications and emergencies. Fully 80% of the deliveries in the United States are done by general practitioners; sooner or later, every man doing obstetrics will be faced with a sudden emergency that will tax his ingenuity and ability. Thus the more abnormal obstetrics the generalist can see and work with, the more adequately he will be able to handle such a situation should it be presented to him.

Third or Elective Year.—The third or elective year should be available to those who wish further clinical training in a particular clinical field, whatever the choice. During the graduate training the bedside instruction should be supplemented by regular conferences and seminars; audiovisual aids; availability of laboratory facilities, both pathological and clinical; an adequate medical library; examination of pathological tissues; and case records. An adequate outpatient or home service, depending upon the size of the hospital or community involved, should be available, so that adequate training can be received in the management of ambulatory patients.

The Art of Practice of Medicine.—The art of the practice of medicine is an intangible something that enables a doctor to establish and maintain a good rapport with his patients. The ultimate of this art is to have a patient feel that his doctor is deeply interested in him as a human being and that he is doing everything for his particular illness that can be done. A continuing program of instruction by the example of the teaching staff in the art of getting along with patients and with other doctors should be an accepted feature of any residency. How tragic it is to see a young well-trained physician bring to the public the best scientific medicine available and yet dispense that knowledge to the patient in an unprofessional or immature manner.

Administration of Program.—The director of the residency program should be selected with care and should be given full responsibility and authority for setting up and administering the program. He must have the complete support and respect of the entire professional staff of the institution involved and should be well acquainted with and sympathetic to the broad and complex problems, not only clinical but economic and social as well, that confront the generalist. The faculty and clinical staff should consist of physicians and associates who are of unquestioned ability, training, and experience and who have a deep interest in and a dedication to the development of competent general physicians. The general resident must not be viewed as being in a position of inferiority but should be accorded the same prestige and dignity as is given to residents in any other medical field.

Objectives

The objectives of a graduate medical program in preparation for general practice should, first of all, be the presentation of opportunities for advanced training and education for the young doctor who wishes to enter the field of general medicine. Secondly, such a program should develop his clinical judgment and technical ability to a high degree of proficiency, make him realize his limitations as well as his capabilities, create within him a sacred sense of ethical and moral responsibility, and add to his personality the quality of professional maturity.

No one man can outline a general practice residency program that could be completely adapted to all hospitals or all residents. The Joint Residency Review Committee of the Council on Medical Education and Hospitals has been working on these details for over two years and is making real progress and a real contribution toward the solution to this problem. The important point to remember is that the principles of such a residency can be adapted to many hospitals that now have no house staff at all, as well as to our best teaching hospitals. In those few hospitals whose residencies in general practice have been made worthwhile and are on a par with the residencies in the specialties there are many more applicants than positions. Let us hope that as more momentum is given to the solution of this, one of the basic unsolved problems of medicine, many such residencies will turn away applicants. More applications than positions denotes a healthy situation indeed.

The entire field of graduate as well as undergraduate and postgraduate training for a generalist is closely allied to the problem of his hospital privileges. There is no incentive for a doctor to perfect additional techniques unless he can use them in his hospital practice. The restriction of hospital privileges of a doctor who is thoroughly capable just because he does not have board certification not only is contrary to the philosophy of the American Medical Association but is unjust and discriminatory. The Joint Commission on Accreditation from the standpoint of surgical privileges in hospitals says:

> There is no specific answer to the question "Who may do surgery?" Good surgery cannot be measured blindly by years of residency, preceptorship, or number of operations assisted at or performed. Certain individuals—no matter how long or where their training—will never become good surgeons. Formal resident training, college of surgeons fellowship, or board certification are all excellent criteria; and, a physician desiring to do surgery should be encouraged to set them as his goals. The

frank, brutal truth remains, however, that they sometimes—though not often—are only a piece of paper; that time can warp a man's judgment, and poor health can slow the facilities of the surgeon's hands until he becomes a dangerous man in the operating room. Merit alone is the only criterion for judging a physician's surgical abilities. . . . In our present medical setup, this means that a staff surgeon should be judged by those other members of the staff who have seen him work, use his judgment and exercise his ability. It becomes a local personal equation in every hospital. It is a terrific responsibility. It can never be decided on a friendship, personality, or class basis.

It is hoped that as our general practice residencies evolve, the problem of hospital privileges will correspondingly become less acute. I can see where in the future, if all facets of medicine cooperate in such a venture, the capabilities of each staff member of every hospital could be completely evaluated and the problem could be completely solved.

Comment

The challenge is present; the opportunities are unlimited. Unless medical educators and medical schools take the initiative in providing two-and-three-year, well-rounded internship-residency programs for those who desire them in general practice, the generalist will continue to enter private practice with a meager one-year internship as his graduate training, grossly unprepared and ill equipped to do comprehensive general medicine. Such is not in the best interests of the patient, whose welfare should be our first consideration.

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GRADUATE EDUCATION FOR GENERAL PRACTICE FROM THE VIEWPOINT OF INTERNAL MEDICINE

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I am charged with presenting a paper on the role of internal medicine in graduate training for general practice. It is more complicated than my skill or the time allows for solution. I have many convictions and some ideas, but very little sound information about the subject. I present my statements with humility. I think in all our teaching we should have before us, all the time, the view of what is best for those who are sick and who come to us as patients.

At the State University of Iowa College of Medicine a residency for general practice was established some five years ago. That residency has been discontinued. There were three major reasons. The first was the uncertainty of anyone's planning a residency because of the military obligation that lies before many young men, certain in fact but uncertain in time. Next, an inadequate number of residents were applying. Third, there was the fact that, of those who took the residency, a good many, having been given some taste of a specialty in the general practice residency, decided to become specialists.

This is not a new problem, as I should like to remind you by quoting an excerpt from an 1845 issue of *Punch*.

> A scheme, it appears, has been set on foot for the establishment of a "College of General Practitioners". Now, since diseases, very generally are either imaginary or such as would get well of themselves if let alone, one highly important branch of General Practice is the treatment of cases which do not require it. The General Practitioner, though not a Consulting Physician, must consult his own interest. *Verb. sat. sap;* but if the College Examiners are not saps, they may take a hint from *Punch*. Teachers must first be taught; and here, for the benefit of those whom it may concern, is a little

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Read in the Symposium on Graduate Education for General Practice, 1957, before the 53rd Annual Congress on Medical Education and Licensure, Chicago, Feb. 10, 1957.

• *Within the broad body of internal medicine most of the subspecialties have remained, whereas in the surgical specialties they have splintered off into separate groups. This suggests that the wide variation of content in the field of internal medicine makes it a very satisfactory beginning point for the training of the student for general practice. The quintessence of internal medicine is really an attitude of mind or way of thinking about people. It should be the central theme of all specialties and is vital in general practice. Experience with residencies for general practice has not been encouraging, and analysis of the work of physicians in general practice suggests that the best preparation for it is training in internal medicine.*

Appropriate Examination Paper: with Answers

Q. What should be the medical treatment of a common cold, which, in fact, requires only white-wine-whey and a footpan?

A. *Pulv. Antim:* grains five, to be taken at bed-time; and *Mistura Feb:* three tablespoonsful every three hours, with *Emplast: Picis* to the region of the chest.

Q. If you asked a patient to put out his tongue, and found it perfectly clean, what would you do?

A. Shake my head, and say, "Ah!" or "Hum!"

Q. What is the meaning of "Hum," Sir?

A. It means, "I see what is the matter with you."

Q. How would you look on feeling a pulse which proved natural and regular?

A. Very serious: and I would pretend to be calculating.

Q. A lady, slightly indisposed, asks whether you don't think her very ill—Your answer?

A. I should say that she would have been so if she hadn't sent for me in time."

As Dr. Hildebrand (page 1588) has stated, many sick people are taken care of, and taken care of well, by general physicians. Forty years ago James Mackenzie said:

The vast majority of students who enter on the study of medicine ultimately become general practitioners, and yet a student may pass through his curriculum and be instructed for years by a large number of teachers, not one of whom has had any experience of the life he is to lead as a general practitioner. As a result, a large portion of the student's time and energy have been spent in acquiring information that is of no use to him in the practice of his profession, while much of the knowledge which he often finds essential has never been given to him.

Everyone has his own ideas or ideals about what a good physician should be. The various characteristics that should go into his make-up can reach their full development only in a person who has the requisite natural talent and ability, has received proper training, teaching, and experience, and is motivated to continue to be a student of medicine for the duration of his life. We all agree that medicine now is far too complicated to learn except in outline during the undergraduate years. Only to a modest degree can even extensive residency training provide its supplementary and complementary elements.

Many have read the recent study done in North Carolina on general practice. I have read it in detail, thinking that perhaps it might solve for me the problems that I am presenting in this paper. Those who have read the report carefully know that the study was designed, devised, and carried out by internists. The major conclusions were that those physicians in general practice who were doing the best job were those who had done best in medical school and those who had had the most residency training in internal medicine. This was true in all the various aspects of medical care. Whatever the artifact or the bias, I think the central role of general medicine was at least demonstrated significantly for those people in that area in that time.

In the training of the family physican, both as an undergraduate and a resident, one should be concerned about his morals and ethics. If the physician is not honest and does not have an understanding of the moral and ethical requirements of proper medical practice, it is unlikely that he will get it in medical school or in a residency training, though what he does get should be very important. It comes from example rather than from any formal teaching. I know of no sensible way to impart a proper moral and ethical sense by a course in the curriculum devoted to that subject.

The quintessence of internal medicine is really an attitude of mind or way of thinking about people and patients. It is by no means unique to internal medicine. It should be the central theme of all specialties. It requires an understanding of the basic principles of the scientific aspects of medicine and enough experience at solving problems under supervision so that one can make the proper use of history taking, records, physical examination, laboratory procedures, and office arrangement, as well as comprehend the socioeconomic problems, keep up with the new medical advances, discriminate among the various forms of medical advertisements, and join in the community as a citizen. No residency in internal medicine or in general practice has been devised that will guarantee that we do not have some rule-of-thumb, cookbook physicians who never read, never go to meetings, and are only interested in a big patient volume of quick turnover and easy money.

Elements of Learning

In internal medicine we may be able to teach technical ability, but the student himself—the undergraduate or the postgraduate—must learn the things that, when developed to a high peak, constitute clinical wisdom. Learning to be a good physician depends basically on three elements. They can be connected in a great variety of patterns in various curriculums and with many kinds of residency training programs and allocations of varying amounts of time. The three elements are good students, good teachers, and satisfactory physical arrangements that bring patient, physician, and pupil together conveniently so that the learning student or resident works out his own medical management under supervision that diminishes as his experience grows. While I hold no brief that internal medicine is the only place this can be done, the fact that, within the broad body of internal medicine, most of the subspecialties have remained, whereas, in the surgical specialties, they have splintered off into separate groups, suggests that the wide variation of content in the field of internal medicine makes it a very satisfactory beginning point.

If one understands the very few "causes" of disease that can be identified, six in all—namely, injury, infection, defective diet, malformation, neoplasm, and poisoning—he has a good start in clinical practice, be it general or special. In no sense, however, is the doctrine or dogma of internal medicine the only way to learn to be a good general physician. However, since the majority of patients and the majority of diseases fall within its broad ranges, it would be foolish to consider training for general practice without emphasizing internal medicine.

In conclusion, I should like to quote from Latham's "Lectures on Subjects Connected with Clinical Medicine," which was published in 1837:

If all medical students had 15 or 20 years at their disposal, and could dedicate them all to professional education, we might pardon a little innocent declamation in displaying the rich and varied field of knowledge about to be disclosed to them; but even then, sober truth would compel us to confess that the field so pompously displayed far exceeded in extent what the best mind could hope to encompass even in 15 to 20 years. When, however, we recollect what space of time the majority of men so addressed really can give to their education, the whole affair becomes inexpressibly ludicrous.

Now, I do protest, in the name of common sense, against all such proceedings as this. It is all very fine to insist that the eye cannot be understood without a knowledge of optics, nor the circulation without hydraulics, nor the bones or muscles without mechanics; that metaphysics may have their use in leading us through the intricate functions of the nervous system and the mysterious connections of mind and matter. It is a truth; and it is a truth, also, that the whole circle of science is required to comprehend a single particle of matter; but the most solemn truth of all is that the life of man is threescore years and ten.

GRADUATE EDUCATION FOR GENERAL PRACTICE FROM THE VIEWPOINT OF SURGERY

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• *If all physicians would treat only those patients to whom they felt they could render the best available service, there would be few problems of restriction of practice. In contemplating an operation, anyone performing the surgery should be able to answer in the affirmative the question, "Can I give as good care to this patient as is available to him?" One cannot be self-critical for lack of ability because of inherent weaknesses. However, one should be chagrined at inferior results of surgery due to inadequate training.*

The great majority of people entering the profession of medicine do so for the satisfaction of serving their fellow man by helping to maintain or restore his mental and physical health and happiness. Perhaps no other physician realizes this true satisfaction so much as does the general practitioner or generalist. He is not only the family doctor but the adviser and counselor. He sees his patients not only at the time he treats a specific ailment but for years or throughout their lifetime. He is one of the most important men in every community. In recent years a feeling has developed, perhaps most keenly in the minds of the generalists themselves, that general practice is on the way out and that the generalist is an individual inferior to the medical specialist. I believe this to be far from the truth. A generation or two ago, most existing medical knowledge and skill could be encompassed by one individual. Specialists were few, were self-taught, and learned by the trial and error method. They were available to few communities. It was the responsibility and privilege of the generalist to administer to all types of human ailment.

The rapid and vast increase of our knowledge of disease and techniques of therapy, of new drugs, of methods of prevention as well as of treatment of various ailments has expanded the field of medicine so much that no one person can master all of its phases to a degree that will give the best possible care to the patient. Because of this, specialization has developed. The training of specialists has gradually progressed and improved, passing from the stage of self-education through a period of rather poorly organized training opportunities, consisting largely of preceptorships and brief postgraduate courses, to our present stage of highly organized and regulated graduate training. This became necessary in order to provide facilities to meet the ever increasing need for training of well-qualified specialists and to assure the highest levels of education.

In order to standardize the training considered by our medical leaders as requisite for specialization; to give recognition to those physicians considered qualified as specialists; and to continue to recognize those physicians who will in the future secure acceptable training and who demonstrate satisfactory knowledge, technical ability, and ethical and moral standards to be judged safe to practice their specialty, the American colleges and specialty boards were established. These governing bodies not only carefully supervise the training program but continue to increase requirements as new knowledge in the specialties is developed. Their function is not to curtail the unrecognized practitioner but to give assurance to the patient that an approved specialist is competent in his field.

It is true that the majority of operations performed in this country are done by the generalist. Many general practitioners are excellent surgeons who have become so because of their own natural ability, conscientious efforts at self-improvement, diligent study, and a sincere regard for their patients. However, many generalists who perform operations have not developed so well. This may be due to inadequate training, poor preceptorship, a lack of inherent ability, or an unwillingness to maintain the driving force required for continued education. This can be proved in many fields of surgery.

At the University of Illinois, 130 patients have been operated on for strictures of the common bile duct secondary to previous gallbladder surgery. Of this number, to my knowledge, only three or four had their original operation on the biliary tract performed by a board-certified surgeon. A survey was made of a large number of small hospitals in an effort to determine the number of hospital deaths following gallbladder surgery. The mortality rate was nearly 10 times as high as that encountered in most of the hospitals where only well-qualified surgeons may operate. It is true that many of these operations were performed as emergency procedures on critically ill patients who were too sick to be transported to competent specialists or whom such specialists could not reach in time to perform the operation. This, however, does not entirely account for the marked difference in mortality rate.

A general practitioner once said to me, "Why should I not do my own gallbladder surgery when there are so many well-qualified specialists to correct my mistakes?" This attitude not only adds to the misery, expense, hospitalization, and unemployment of the patient but often produces damage that cannot be satisfactorily repaired.

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Specialty training is not merely a matter of the development of operative techniques. It includes the advancement of diagnostic ability, surgical judgment, preoperative preparation of patients, postoperative care, and especially the ability to combat any complication that may arise. The basic principles of the fundamental sciences as well as of surgery should be a prerequisite to training in general surgery and all of its subspecialties. A surgeon must be qualified to handle properly the problems that may result from a wrong diagnosis or an unrecognized secondary condition. It may be to the detriment of the patient for an operator to have to call for help in the middle of an operation because he is incapable of handling his findings. For his long years of training, the specialist is rewarded by the satisfaction of being able to perform a complicated or delicate procedure that will benefit the patient. However, he loses the great satisfaction the generalist has of long and respected association with his patients.

The question at this time is, "What should constitute graduate education for general practice today from the viewpoint of surgery?" This discussion does not apply to physicians of past generations who did not have opportunities for graduate training but who became good surgeons for their time by diligent, conscientious, and prolonged effort. Even before the era of recognized specialization, these men became leaders and performed most of the operations. Regulations of hospital privileges have existed in many institutions for many years, and not all general practitioners in the past have been permitted to perform any surgical procedures that might develop in their practice.

I am dealing with the training needs of physicians of the future. It is generally agreed that a one-year internship after medical school does not qualify a physician to be a good generalist nor a competent doctor. Two-year and three-year programs of general practice residency have been suggested. Such programs include training in medicine, pediatrics, obstetrics and gynecology, psychiatry, anesthesiology, surgery, and orthopedics. Were one to take residencies in all of these subjects of a nature deemed necessary by the specialty boards, he would need to spend from 15 to 20 years in resident training. One cannot conceive of any physician spending such time in training, nor would it be advisable. On the other hand, it is inconceivable that an individual can get a thorough knowledge in all of these specialties in two or three years.

This does not mean that a two-year or three-year residency will not enable a physician to become an excellent generalist. He will continue to handle well the great majority of medical problems presented to him. He will maintain the confidence of his patients and play a role in their life that can seldom be equaled by a specialist. However, he must recognize his limitations, especially in surgery, and seek the aid of specialists when problems beyond his ability are encountered. Even the generalists recognize that medicine has too broad a scope for any one individual, as is shown in the suggested programs for the two-year and three-year general practice residency training. These offer a considerable latitude of varying degrees of training in the specialties that particularly appeal to the individual physician. Limitations in practice should not have to be regulated by governing codes but should be self-imposed by the knowledge of the physician of his own capabilities. Unfortunately, this knowledge often is overpowered by the desire of the physician to perform a surgical procedure for which he is not well qualified.

In the entire field of medicine, the specialists are far more limited than are generalists. Their field usually is quite narrow, and their knowledge of other fields is inadequate to justify medical therapy. Most specialists recognize this and refer their patients to the physician who can be of greatest service. The aims of good surgical training have been well expressed by McKittrick,[1] who says:

> If we are truly interested in a program of bringing better care to our patients, can we continue to justify any program which would lower the standards of surgery to meet the limited qualifications of those inadequately trained? Or, should we encourage and work toward the development of more adequate training programs in an effort to bring the level of surgical practice in our community hospitals to that of our large cities? I believe that most of the surgical needs of the public can and should be fulfilled in our community hospitals—not in the larger centers. However, to do this safely, our smaller communities need surgeons of broader training than do our university hospitals.

The programs required by the surgical specialty boards have been well planned and include what we believe to be necessary training. Such training could not be obtained in a shorter period than they have recommended. One year of a surgical residency does not qualify a generalist to perform major surgery or to open body cavities. It will equip him to perform many minor procedures in general and traumatic surgery and in the management of some simple fractures. There are more opportunities for a competent graduating physician to secure adequate surgical training than there are applicants to fill these positions. Anyone wishing to perform major surgery should seek such training. There are no shortcuts to good education. In contemplating an operation, a surgeon should be able to answer in the affirmative the question, "Can I give as good care to this patient as is available to him?" One cannot be self-critical for lack of ability because of inherent weaknesses. However, one should be chagrined at inferior results of surgery due to inadequate training.

The general practitioner continues to be the mainstay of American medicine. If all physicians would treat only those patients to whom they feel they could render the best available service, there would be few problems of restriction of practice.

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GRADUATE EDUCATION FOR GENERAL PRACTICE FROM THE VIEWPOINT OF PEDIATRICS

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• *General practitioners provide a greater percentage of the medical care for children than any other group of physicians. Since the general practitioner devotes such a large part of his practice to the care of persons under 15 years of age, he encounters special problems important in pediatrics. These include immunization, fluid balance, allergy, nutrition, orthopedics, and psychiatry. Care of the newborn infants and the study of normal growth and development patterns require time and numerous cases to give the physician confident judgment. Hospital teaching programs can and should provide the continuing education that is so necessary in understanding the problems in pediatrics that are so commonly encountered in general practice.*

Practically 100% of students entering medical school do so with the highest ideals. Coupled with this is a fervid desire to be of service to people. This premise has fewer exceptions than any other concept I have met in medicine. The desire to be of service persists and, molded by various factors in the personality of the individual and the training to which he is exposed, finds expression in practice, teaching, or research. Perhaps all three will be developed in one individual. Probably the most demanding of time, knowledge, and courage is what we call general practice. As the accumulation of scientific knowledge has increased and accelerated, the task of all physicians has increased, particularly has the general practitioner had to spend more time in study if he is to keep up to date.

Pediatrics has a similarity to general practice greater than is found in those specialties limited to an organ or a system, yet the training for pediatrics practically omits surgery, obstetrics, and the geriatric problems except as they constitute part of the child's environment. It is not hard to imagine a time when better training of the general practitioner and more intensive exposure to children in the training period will change the present characteristics of the practice and of the training of pediatricians. Right now we see the development of such subspecialties as pediatric cardiology, pediatric psychiatry, pediatric endocrinology, and even pediatric pathology. Wilson [1] has stated that the residency period for pediatric specialization should be increased to three years and perhaps longer if the men in that field are to be thoroughly trained in the more intricate problems.

The scientific advances in the fields of chemotherapy and of immunization procedures have changed the aspect of medical care of children possibly even more than they have changed the general practice of medicine. It is much less difficult to keep children alive than it is to keep them even reasonably happy in the longer life they can anticipate. The programs of medical education have changed to some degree and are continuing to change to meet these alterations in practice.

What proportion of general practice is occupied by pediatric problems? In the study of child health services carried out by the American Academy of Pediatrics from 1946 to 1948,[2] it was demonstrated that the general practitioner gave a greater percentage of the medical care of children than was given by any other group of physicians. Several of my friends in general practice have told me that about 30% of their work is with children.

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In the study of general practice in North Carolina, Peterson and co-workers [3] pointed out many interesting features relative to the type of patients and diagnoses met in the work of the group studied. For example, in tabulating the reasons for patient visits, it was shown that well baby and child care (infant to 5 years of age) ranked third. (Note that this is well child visits and does not include all the pediatric visits for infections of one kind or another.) The number of well baby and child care visits was exceeded only by prenatal visits and by visits for patients with upper respiratory infections in multiple or unspecified sites. In the same study it was pointed out that 23.7% of all visits were for persons 15 years of age or less. These figures emphasize the need for training in and familiarity with pediatric problems.

Problems in the Care of Children

While teaching interns, residents, and graduate students and working with practicing physicians and younger pediatricians as well as with program committees, I have been impressed by cries for help or for education in respect to several types of problems met in the care of children. These can be divided into two main groups as signposts pointing to lacks in the medical education experienced by these individuals.

Among the first group of problems are included (1) active and passive immunization procedures and the indications and contraindications for each; (2) problems of electrolyte and fluid balance in the young child, in whom the margin of safety is much smaller than it is in adults; (3) the protean possibilities of allergy and the risk of sensitization by overexposure to possible antigens, without the overemphasis that allergy sometimes receives; (4) principles of nutrition and the flexibility of diet permissible with those principles; and (5) recognition and prevention or treatment of simple orthopedic problems. This group of problems is susceptible to teaching in medical schools

and in hospitals with even a small number of pediatric patients. They must be borne in mind, and the teaching programs arranged to make the most of the material available.

The second group of problems is not so easily managed in teaching programs of any kind. This group includes the following subjects: 1. The physical, physiological, and psychological changes occurring in the adolescent. 2. The pattern of mental and emotional development of the young child and the various factors of a genetic and environmental nature that may affect this pattern. Familiarity with these factors is helpful in guiding young parents and in helping them and the child toward a happy family life. Alertness for the danger signals indicating severe disturbance and for the need for expert care is necessary. 3. The cephalocaudad progression of motor development of variations that may be diagnostic of serious trouble or may be within the normal range. 4. The newborn infant. In this age bracket there is still a mortality rate that is susceptible to reduction by early recognition of danger signs and adequate treatment. 5. The acute infections that are still seen, though less frequently than in the past. They still require definitive diagnosis and the courage to omit short-range treatment until the diagnosis is established or all possible tests are exhausted.

These five subjects are more difficult to teach than those in the first group, because they require more than book knowledge. They require time, study of numerous cases, and observation of the same individual over a long period. One cannot teach experience. It must be lived and endured, sometimes painfully.

Psychiatry prevades all fields of medicine, and all of us are finding that we do not treat a condition but a person. Not only do we treat a person alone but we must include the family. When we have gone that far, we must include the community, and, in doing so, we must include all sections of medicine and other professions as well.

Helpful Mechanisms in Graduate Pediatric Training

Since we are faced with the fact that we cannot teach all the things necessary for good medicine in the framework of the medical school and subsequent internship, the answer is continued education. Postgraduate and refresher courses have grown, and attendance, as shown by the study of Vollan,[4] has increased but still is localized to certain areas. Our job, as Hildebrand (page 1588) has stated, is to make knowledge easier to obtain and at the same time to stimulate the desire to obtain it. I would like to suggest certain mechanisms that may help in achieving this end.

There should be emphasis on the teaching program. Not only should conferences stress the unusual but there should be a reasonable repetition of the common disorders in order to increase the familiarity of the younger staff members with them. Concentration of teaching material is helpful. For example, children with heart disease can be brought in on certain days and treated in the pediatric clinic. This gives an opportunity to show the same lesion in children of different ages and for teaching purposes simulates a follow-up on the same patient. Each resident should spend at least six months on a reasonably active service. There should be a minimum of 30 beds on the ward, with some surgical and some medical cases. In addition, there should be at least 20 bassinets, so that the resident may gain experience in pediatrics. There should be coordination of hospitals so as to give all interns an adequate service and to utilize exchange or affiliated services if necessary. The insularity of individual hospitals, communities, and political boundaries must be broken down or bridged. The resident should have outpatient work in a child guidance clinic or at least an exposure to psychiatric methodology and appraisals. This should be in addition to the usual range of emotional factors encountered in the individual patient.

There should be continued outpatient work with pediatrics and the subspecialties after formal training is over. Where this is impossible because of distances and lack of facilities locally, there should be an organized program to supply a temporary substitute from the second-year or third-year group of residents in general practice and internal medicine, in order to insure coverage of the practice. The income during that period could be used not only to pay the temporary substitute but also to help support the general practitioner during a period of postgraduate study and refresher courses. There should be organized training in school work in order to give the resident familiarity with the adolescent group in as short a time as possible. Properly supervised, this type of training can be extremely valuable. State board examinations should always include an examination in pediatrics. This alone would make it necessary to do some work with children.

Available Teaching Material

These suggestions are not easy to carry out when you look at the available teaching material. Consider the hospitals accredited for intern training as listed in the Sept. 22, 1956, issue of THE JOURNAL (pages 291-311), and picture from your own knowledge of these hospitals how much pediatric training the interns get. One must realize too that many of these hospitals do not have their full quota of interns; thus the best intentions of the visiting staff are frustrated because the intern is elsewhere when teaching is available.

Of 809 nonfederal hospitals accredited for internship, 51 have from 101 to 150 beds; 148, 151 to 200 beds; 155, 201 to 250 beds; 124, 251-300 beds; and 331, 300 beds or more. The total number of internships in the 809 hospitals was 11,348.

Of the 809 hospitals, 259 were recognized for pediatric residency. This number includes those hospitals on the border line of recognition or compulsory affiliation and those not yet inspected. Of the 259, 28 are children's hospitals, thus leaving 231 general hospitals with enough service in pediatrics to warrant recognition for residency in pediatrics. The remaining 578 of the 809 hospitals are accredited for intern training but not for pediatric residency. Forty-seven of the hospitals (not counting the children's hospitals) recognized for residency are of less than 300-bed

GRADUATE EDUCATION FOR GENERAL PRACTICE FROM THE VIEWPOINT OF PEDIATRICS

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• *General practitioners provide a greater percentage of the medical care for children than any other group of physicians. Since the general practitioner devotes such a large part of his practice to the care of persons under 15 years of age, he encounters special problems important in pediatrics. These include immunization, fluid balance, allergy, nutrition, orthopedics, and psychiatry. Care of the newborn infants and the study of normal growth and development patterns require time and numerous cases to give the physician confident judgment. Hospital teaching programs can and should provide the continuing education that is so necessary in understanding the problems in pediatrics that are so commonly encountered in general practice.*

Practically 100% of students entering medical school do so with the highest ideals. Coupled with this is a fervid desire to be of service to people. This premise has fewer exceptions than any other concept I have met in medicine. The desire to be of service persists and, molded by various factors in the personality of the individual and the training to which he is exposed, finds expression in practice, teaching, or research. Perhaps all three will be developed in one individual. Probably the most demanding of time, knowledge, and courage is what we call general practice. As the accumulation of scientific knowledge has increased and accelerated, the task of all physicians has increased, particularly has the general practitioner had to spend more time in study if he is to keep up to date.

Pediatrics has a similarity to general practice greater than is found in those specialties limited to an organ or a system, yet the training for pediatrics practically omits surgery, obstetrics, and the geriatric problems except as they constitute part of the child's environment. It is not hard to imagine a time when better training of the general practitioner and more intensive exposure to children in the training period will change the present characteristics of the practice and of the training of pediatricians. Right now we see the development of such subspecialties as pediatric cardiology, pediatric psychiatry, pediatric endocrinology, and even pediatric pathology. Wilson [1] has stated that the residency period for pediatric specialization should be increased to three years and perhaps longer if the men in that field are to be thoroughly trained in the more intricate problems.

The scientific advances in the fields of chemotherapy and of immunization procedures have changed the aspect of medical care of children possibly even more than they have changed the general practice of medicine. It is much less difficult to keep children alive than it is to keep them even reasonably happy in the longer life they can anticipate. The programs of medical education have changed to some degree and are continuing to change to meet these alterations in practice.

What proportion of general practice is occupied by pediatric problems? In the study of child health services carried out by the American Academy of Pediatrics from 1946 to 1948,[2] it was demonstrated that the general practitioner gave a greater percentage of the medical care of children than was given by any other group of physicians. Several of my friends in general practice have told me that about 30% of their work is with children.

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In the study of general practice in North Carolina, Peterson and co-workers [3] pointed out many interesting features relative to the type of patients and diagnoses met in the work of the group studied. For example, in tabulating the reasons for patient visits, it was shown that well baby and child care (infant to 5 years of age) ranked third. (Note that this is well child visits and does not include all the pediatric visits for infections of one kind or another.) The number of well baby and child care visits was exceeded only by prenatal visits and by visits for patients with upper respiratory infections in multiple or unspecified sites. In the same study it was pointed out that 23.7% of all visits were for persons 15 years of age or less. These figures emphasize the need for training in and familiarity with pediatric problems.

Problems in the Care of Children

While teaching interns, residents, and graduate students and working with practicing physicians and younger pediatricians as well as with program committees, I have been impressed by cries for help or for education in respect to several types of problems met in the care of children. These can be divided into two main groups as signposts pointing to lacks in the medical education experienced by these individuals.

Among the first group of problems are included (1) active and passive immunization procedures and the indications and contraindications for each; (2) problems of electrolyte and fluid balance in the young child, in whom the margin of safety is much smaller than it is in adults; (3) the protean possibilities of allergy and the risk of sensitization by overexposure to possible antigens, without the overemphasis that allergy sometimes receives; (4) principles of nutrition and the flexibility of diet permissible with those principles; and (5) recognition and prevention or treatment of simple orthopedic problems. This group of problems is susceptible to teaching in medical schools

and in hospitals with even a small number of pediatric patients. They must be borne in mind, and the teaching programs arranged to make the most of the material available.

The second group of problems is not so easily managed in teaching programs of any kind. This group includes the following subjects: 1. The physical, physiological, and psychological changes occurring in the adolescent. 2. The pattern of mental and emotional development of the young child and the various factors of a genetic and environmental nature that may affect this pattern. Familiarity with these factors is helpful in guiding young parents and in helping them and the child toward a happy family life. Alertness for the danger signals indicating severe disturbance and for the need for expert care is necessary. 3. The cephalocaudad progression of motor development of variations that may be diagnostic of serious trouble or may be within the normal range. 4. The newborn infant. In this age bracket there is still a mortality rate that is susceptible to reduction by early recognition of danger signs and adequate treatment. 5. The acute infections that are still seen, though less frequently than in the past. They still require definitive diagnosis and the courage to omit short-range treatment until the diagnosis is established or all possible tests are exhausted.

These five subjects are more difficult to teach than those in the first group, because they require more than book knowledge. They require time, study of numerous cases, and observation of the same individual over a long period. One cannot teach experience. It must be lived and endured, sometimes painfully.

Psychiatry prevades all fields of medicine, and all of us are finding that we do not treat a condition but a person. Not only do we treat a person alone but we must include the family. When we have gone that far, we must include the community, and, in doing so, we must include all sections of medicine and other professions as well.

Helpful Mechanisms in Graduate Pediatric Training

Since we are faced with the fact that we cannot teach all the things necessary for good medicine in the framework of the medical school and subsequent internship, the answer is continued education. Postgraduate and refresher courses have grown, and attendance, as shown by the study of Vollan,[4] has increased but still is localized to certain areas. Our job, as Hildebrand (page 1588) has stated, is to make knowledge easier to obtain and at the same time to stimulate the desire to obtain it. I would like to suggest certain mechanisms that may help in achieving this end.

There should be emphasis on the teaching program. Not only should conferences stress the unusual but there should be a reasonable repetition of the common disorders in order to increase the familiarity of the younger staff members with them. Concentration of teaching material is helpful. For example, children with heart disease can be brought in on certain days and treated in the pediatric clinic. This gives an opportunity to show the same lesion in children of different ages and for teaching purposes simulates a follow-up on the same patient. Each resident should spend at least six months on a reasonably active service. There should be a minimum of 30 beds on the ward, with some surgical and some medical cases. In addition, there should be at least 20 bassinets, so that the resident may gain experience in pediatrics. There should be coordination of hospitals so as to give all interns an adequate service and to utilize exchange or affiliated services if necessary. The insularity of individual hospitals, communities, and political boundaries must be broken down or bridged. The resident should have outpatient work in a child guidance clinic or at least an exposure to psychiatric methodology and appraisals. This should be in addition to the usual range of emotional factors encountered in the individual patient.

There should be continued outpatient work with pediatrics and the subspecialties after formal training is over. Where this is impossible because of distances and lack of facilities locally, there should be an organized program to supply a temporary substitute from the second-year or third-year group of residents in general practice and internal medicine, in order to insure coverage of the practice. The income during that period could be used not only to pay the temporary substitute but also to help support the general practitioner during a period of postgraduate study and refresher courses. There should be organized training in school work in order to give the resident familiarity with the adolescent group in as short a time as possible. Properly supervised, this type of training can be extremely valuable. State board examinations should always include an examination in pediatrics. This alone would make it necessary to do some work with children.

Available Teaching Material

These suggestions are not easy to carry out when you look at the available teaching material. Consider the hospitals accredited for intern training as listed in the Sept. 22, 1956, issue of THE JOURNAL (pages 291-311), and picture from your own knowledge of these hospitals how much pediatric training the interns get. One must realize too that many of these hospitals do not have their full quota of interns; thus the best intentions of the visiting staff are frustrated because the intern is elsewhere when teaching is available.

Of 809 nonfederal hospitals accredited for internship, 51 have from 101 to 150 beds; 148, 151 to 200 beds; 155, 201 to 250 beds; 124, 251-300 beds; and 331, 300 beds or more. The total number of internships in the 809 hospitals was 11,348.

Of the 809 hospitals, 259 were recognized for pediatric residency. This number includes those hospitals on the border line of recognition or compulsory affiliation and those not yet inspected. Of the 259, 28 are children's hospitals, thus leaving 231 general hospitals with enough service in pediatrics to warrant recognition for residency in pediatrics. The remaining 578 of the 809 hospitals are accredited for intern training but not for pediatric residency. Forty-seven of the hospitals (not counting the children's hospitals) recognized for residency are of less than 300-bed

capacity. One is under 150 beds, 4 under 200, 16 under 250, and 26 under 300. Of the 809 hospitals, 331 of them have 301 or more beds, thus leaving 478 hospitals recognized for internship with less than 300 beds, 47 of which are, or have been prior to 1957, recognized for residency in pediatrics.

There are some important questions that should be considered in regard to the intern's training in these hospitals. How much time does he get on pediatric service in these hospitals? How much work does he have in the outpatient service? How much follow-up work on the same patient is he able to do? How much supervision does he have while on these services? How many newborn babies does he see, and how much instruction does he receive about them? How often do we see the pediatric patients visiting the more limited specialty clinics organized for certain days to increase their effectiveness for teaching such subjects as cardiology, orthopedics, and ophthalmology?

All this points up an area where hospital teaching programs can and should be improved.

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GRADUATE EDUCATION FOR GENERAL PRACTICE FROM VIEW OF OBSTETRICS AND GYNECOLOGY

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• A universally acceptable definition of general practice is prerequisite for discussions of graduate education in general practice, as distinguished from the specialties. It is sometimes thought of as a new specialty in itself. When the general practitioner takes obstetric cases he finds that any one of them may be precipitated into a major emergency. If only four to six months are available for this aspect of a residency, emphasis should be placed on the basic education necessary for the management of the large majority of obstetric and gynecologic patients. A minimal preparation of two years, however, offers increased protection to the physician as well as to the patient. The content of such a program, its integration with existing education facilities, and its adaptation to the needs and previous experience of the resident raise many questions, and there are many variables to be considered in the answers.

I am thoroughly in accord with the premise that an improved educational experience is desirable preparation for general practice, although I am not entirely certain what is meant by the term, for no universally acceptable definition seems to exist. I have attempted to become acquainted with the background of thinking already expressed on the general proposition. The following statements are some examples of such thinking.

> What is at stake here is the development of a new man of medicine. If he can be achieved, all doctors will have the same level of medical education, and it will be high. There must be no suggestion of inferior or second-rate training for this new man of medicine.[1]

> Is it not time, therefore, that every effort should be made to assure the same high standards of preparation for "specialists" in this important field as have been given to the preparation of personnel in the narrower specialties?[2]

> General Practice Residencies should be flexible, both as to content and duration, depending on the special needs of the individual resident. It is recommended that Residency programs be of at least two years' duration. In a two-year Residency the first year should be devoted to internal medicine and the medical specialties. The second year may be devoted to training in surgery and the surgical specialties and gynecology and obstetrics.[3]

One educator with experience in this aspect of residency training made the statement a year ago that until a few months previously he had been in favor of the flexible program but had come to the conclusion that the residents themselves did not know what they needed or wanted. This comment, as well as the three given above, is from a thoughtful man confronted with a problem. The statements are not cited as an argument against the improved educational experience under discussion but are mentioned simply to emphasize the fact that we are asked to suggest standards of education and training for special fields in an area of medicine in which no uniform standards exist now and for which flexible standards are proposed.

If one is to take a frank look at what he thinks ought to be basic graduate preparation for general practice today, and considers that the basic indoctrination subsequently recommended must be thoroughly sound and of sufficient scope to make it possible to do an intelligent job, and if he considers the time allotments to the various fields of medicine, he must pause to reflect on "the same level of medical education" and "the same high standards of preparation" and wonder if these goals can be reached. The quality of these short

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courses should be high, but the standard of preparation must indeed fall short when compared with the preparation now in force in the narrower specialties.

Aspects of Obstetrics and Gynecology for Emphasis

After reading the Essentials for Residency Training in General Practice, as outlined by the Council on Medical Education and Hospitals, I can presume that one is to consider first the two-year program, which, from samples that I have seen, may contain four to six months of work in obstetrics and gynecology.

I suspect that early in a general practitioner's career his obstetrics practice will considerably outweigh the gynecologic, at least so far as major problems are concerned. Therefore, more emphasis should be placed on the former, and the effort to concentrate on complications and emergency situations should be greater than in the latter. Much of obstetrics may be normal, so to speak, but it should be remembered that in any obstetric case one may be precipitated into a major emergency. Witness the problems of shock and hemorrhage associated with placenta previa, premature separation of the placenta, and postpartum hemorrhage, in which even the facilities of a well-organized obstetrics department may be severely taxed. These are conditions of such acuteness that consultation and assistance may not be secured in the time allowed for adequate care of the patient. Hemorrhage continues to be the major cause of maternal death in many areas. On the other hand, prolonged labor, the management of occipitoposterior positions, and the performance of cesarean section often may be less acute.

Actually, much of obstetrics is of the nature of preventive medicine. Accordingly, the resident should be schooled in all aspects of prenatal care; the management of normal delivery, including the application of outlet forceps, episiotomy, and repair; the management of the third stage of labor; recognition of the complications of labor; selection of anesthetic and analgesic; evaluation of shock; the management of hemorrhage; and resuscitation of the infant. One may add the valid indications for the induction of labor and the techniques thereof; management of abortions, breech deliveries, and multiple births; the treatment of toxemias; control of fluid and electrolyte balance; and management of ectopic pregnancy. Obviously, this list of essentials can be extended, together with the nuances of diagnosis and treatment that are acquired only by increasing experience.

Gynecology represents a complex of physiology, anatomic changes, and pathology and, in a well-conducted practice, a relatively minimal amount of major surgical procedures—perhaps 15%. Thus, the major part of a general practitioner's gynecologic practice will be that which he conducts in his office, and it is in this area that education should be concentrated. Hence, the techniques of history taking, evaluation of symptoms, and the techniques of pelvic examination, together with the use of special diagnostic procedures, should be carefully taught. Stress should be placed upon the importance of adequate knowledge of the physiology of the genital tract, detection of cancer, recognition of genital pathological conditions and anatomic abnormalities, management of problems of adolescence and the menopause, detection of and selection of treatment for endometriosis, indications for surgical treatment, and selection of proper surgical procedures.

The resident should be schooled in all phases of office gynecology. I would place little emphasis on operative technique in this short period of training. If the resident wishes to concentrate on this aspect, he should secure additional training. In the short period of training it is necessary that he gain that basic experience that will enable him to evaluate the condition of the patient. He will have a broad perspective of the problems and thus will be able to select treatment, some of which he may administer. In addition, however, he should be able to recognize treatment that others should administer.

Training as Distinct from Education

You will observe that the foregoing principally concerns education. For the teacher two problems exist: (1) education, which is concerned with teaching and study for the purpose of understanding, and (2) training, which has to do with habits and techniques. The short time devoted to any field with a two-year rotating residency is little enough for education. How much of it can be applied to surgical techniques rather defies an estimate. I have a notion that the resident will be pushed so rapidly, if too much emphasis is placed on his own application of surgical techniques at this stage in his training, that he would do better to work closely with his teacher and to observe and participate in the teacher's techniques rather than to apply his own too quickly. During this time he will learn the indications for operations and the proper approach to proper treatment.

It should be recalled that 85% of gynecology does not involve major surgical techniques and that in a well-conducted obstetrics practice the incidence of cesarean section is 3%. Therefore, in four to six months of education, emphasis should be placed on the basic education necessary for the management of the large majority of obstetric and gynecologic patients. Presently, much will have to be left to the judgment of the teacher and his evaluation of the resident. Surgical judgment and techniques are gained by practice and experience that seem beyond the possibilities of more than a beginning in six months, and one wonders how much of a stamp of approval will be merited. Included in this basic and abbreviated experience should be teaching to recognize the limitations of this education in order to obviate problems that may arise in the care of patients when this limitation is either unrecognized or ignored. Three or more years of education in a special field are progressive, leading to training in the performance of surgical procedures in the third and fourth years under supervision. A short term of six months may be progressive but perhaps so accelerated that both sound education and training cannot be achieved.

Comment

I have dwelt on the problems of what may be accomplished in four to six months of residency in obstetrics and gynecology. Naturally, when one extends

the time, more can be accomplished. One year of residency in obstetrics and gynecology will offer more, but it seems to me that a minimal preparation of two years offers increased protection to the physician as well as the patient. We should remember, when we make recommendations, that we are answerable to the patient.

For reasons previously mentioned, these statements, made in 1957, are somewhat conjectural. As the products of this attempt to afford better education in preparation for general practice emerge from the residencies, more definitive answers may be given. Additional frank discussions will be necessary before we can answer the questions raised by Dr. Rittelmeyer,[4] who has given much thought to the problem. He has asked: Is the goal clear? Do we know what we want to accomplish? What ingredients must a residency have to warrant official approval and promote effective teaching, and how can the program be coordinated and integrated with existing educational facilities? There are many variables to be considered in the answers.

As an extension of these questions, I have made no attempt to construct an outline that would take into account the previous experience of the resident; his capabilities, wants, and needs; and where he will practice and among what facilities. These unknowns cannot be reckoned with in thinking of basic education as a generality. We have a new concept in graduate medical education that will require teaching quite different from the concepts employed for education and training in special branches of medicine, where one considers what is necessary for all residents.

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GRADUATE EDUCATION FOR GENERAL PRACTICE FROM THE VIEWPOINT OF PSYCHIATRY

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• *The general physician in his education today needs not a diluted form of psychiatry but psychiatric knowledge presented without compromise as to basic concepts. Recognition of diagnostic categories is essential. He must also be prepared to understand the emotional problems that will confront him because of his own reactions to the patient's problems. This knowledge must be presented in terms of the patients to be treated by him rather than the patients who are uniquely those of the psychiatrist. Much of this must come from clinical teachers, in other departments than that of psychiatry, who have absorbed it themselves as students and who automatically include the psychological and emotional factors as data to be gathered and reacted to in the diagnosis and treatment of a patient.*

Graduate education for general practice or any other type of medical practice cannot be dissociated from undergraduate medical education. Education for the physician is indivisible. This is particularly true when one comes to the contribution that might be made by psychiatry to the education of a general practitioner.

Dual Role of Psychiatry

At the risk of being trite, one has to say again that modern dynamic psychiatry plays a dual role in medicine today. As a subspecialty of medicine, it deals in the broadest sense with a group of syndromes that have been categorized as nervous and mental diseases. On the other hand, its other function is perhaps even more significant in the sense that psychiatry as medical psychology is a basic science analogous to physiology, which deals with the patient as a person, particularly in relation to his personality function and the area of psychophysiology. In order to understand what contribution psychiatry can make, therefore, to graduate education for general practice, one must bear in mind these two broad divisions of psychiatry.

In addition, of course, one must have an operational concept of what constitutes general practice. For the purposes of this discussion, one might utilize as a paradigm the recent publication of "An Analytical Study of North Carolina General Practice." One realizes, as did the authors of the study, that general practice may differ from one geographical area to another and perhaps even with the individual physician. Nevertheless, a general area of function may be called the general practice of medicine. This involves the diagnostic evaluation and therapeutic program for a group of individuals who come to a physician for this purpose. With certain limitations, for the most part determined by the practitioner himself, these patients present a wide spectrum of diagnostic and therapeutic problems. As a rule, one important aspect of general practice is a continuing relationship with an individual and his family over a period of time.

In the light of the division of psychiatry into its two basic aspects, it is necessary for the physician to have sufficient knowledge and background to make

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an adequate differential diagnosis in terms of the presence or absence of psychiatric syndromes in the first instance. In relation to the second function of psychiatry, that of a basic science, the capacity of the physician to understand and to take into account the functioning of human personality in its relation to health and disease becomes of the utmost importance. A great deal has been said and written about the science and art of the practice of medicine. The knowledge of what enters into the patient-physician relationship and its role in the practice of medicine involves both the science and the art of the practice of medicine.

The primary problem in this discussion is what kind of education is necessary and possible to give the physician the knowledge that is essential for him to carry out his dual function. Obviously this education in psychiatry cannot begin for the first time after graduation. It certainly belongs as part of his undergraduate medical curriculum, if not earlier. Every individual is the product of many complex forces and is an ecologic unit molded by his heredity, personal history, and environment. All of these contribute to his total functioning in health and disease. The theoretical frame of reference in regard to personality structure and functioning is of the utmost importance for any individual who works with people, particularly if he is engaged in medicine.

Department of Psychiatry

A department of psychiatry in a medical school isolated from other departments functionally, no matter how many hours it devotes to didactic and clinical teaching of psychiatry, usually fails to impart the necessary knowledge and attitude to the medical student that makes for the complete physician. The essence of the learning process is the eventual automatic functioning of that which is learned. The role of the psyche as an integrating force within the individual makes it essential that this role be understood within the limits of our knowledge in all aspects of the functioning of the individual. It becomes important then that psychiatry, as psychophysiology, be demonstrated not only by the psychiatrist as an isolated member of a teaching faculty but also by the physiologist, pharmacologist, biochemist, internist, orthopedist, and, in fact, every teacher of basic science and every clinician with whom the student comes in contact.

If it were practical, the department of psychiatry might profitably spend most of its teaching time with the other members of the faculty rather than with the students. It may seem paradoxical, in view of the increased demands for the students' time made by departments of psychiatry in medical schools, to state that the department of psychiatry should have a minimal but sufficient amount of time with the student to teach him some of its theoretical background and to demonstrate clinical syndromes. The student as a future physician will best be qualified if his teaching of the basic science of psychiatry comes from the knowledgeable clinician, be he internist or surgeon, who utilizes both precept and example and who could thus become a figure for identification. This would make for the automatic inclusion of the psychological and emotional factors as data to be gathered and reacted to in the diagnosis and treatment of a patient.

At the graduate level, which for purposes of this discussion I take to be the internship and residency training, the same thing holds true. Lectures and other forms of didactic teaching are of minimal value. The teaching of what psychiatry has to offer must come through the attending staff on whatever service the young physician happens to be. Too often what the psychiatrist has taught is undone by the attitude and behavior of other clinicians.

Comment

In practical terms, then, in order that psychiatry play a significant role in the graduate teaching for general practice or any other type of practice in medicine, it becomes essential that several generations of teachers become pupils. The teachers must demonstrate to the interns and residents the importance of psychological and emotional factors in all aspects of the total functioning of the individual who is the patient; this demonstration must be in terms of the patients whom they see on their own wards rather than those selected patients who may be on psychiatric services. This is a large order. The psychiatrist cannot shirk the responsibility for the inadequate knowledge that the average physician possesses today in this area. For many years the psychiatrist has been isolated and has isolated himself from the mainstream of medicine. He has developed a special language with which he communicates with his fellow psychiatrists. His concepts and language at times seem strange to his fellow physicians. However, when he has attempted to simplify, he has in many instances lost the essence of his contribution.

The general physician today is not in need of a dilution of psychiatric knowledge, but he does need this basic knowledge presented in simple terms, yet without compromise as to basic concepts. This knowledge must be constantly and continuously presented in terms of the patients treated by him rather than emphasized only in terms of that group of patients that are uniquely those of the psychiatrist. Recognition of diagnostic categories is essential. Awareness of the complexities of personality functioning and interrelationships are important. The knowledge of the role of the patient-physician relationship and its utilization is part of the practice of medicine.

Added to all of this must be the realization that the emotional problems with which the physician may be confronted are not neutral in terms of his own reaction and that, therefore, his capacity to perceive them and handle them involves in most instances his own reactions to such problems. A certain amount of knowledge of self and objectivity becomes an essential part of the professional training of the physician, and this is not achieved only through lectures and demonstrations but eventually involves a type of professional objectivity that is similar to and essential in all other aspects of the practice of medicine. Different physicians achieve this in different ways.

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CLINICAL NOTES

GASTRIC RESPONSE TO FROZEN ORANGE JUICE AND BETAZOLE HYDROCHLORIDE (HISTALOG)

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and
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The ingestion of orange juice by patients with peptic ulcers has been the subject of discussion for several years. Some patients with ulcers complain that orange juice causes epigastric distress. If true, the mechanism by which this occurs is not clear. It is generally accepted that the relief of pain and the facilitation of healing of the ulcer are accomplished by the control of gastric acidity. A factor of equal importance, however, is the nutritional state of the cells of the mucosa, which must withstand the eroding effect of the acid. The resistance of these cells may be adversely affected by caloric deficiencies resulting from starvation, vitamin deficiencies as exemplified by scurvy and purpuras, and acute and chronic infections. A comprehensive regimen for the management of patients with peptic ulcer must include adequate diet, administration of antacids and anticholingerics, rest, sedation, and the management of psychosomatic and emotional factors.

In patients with duodenal ulcer there is an exaggerated secretory response to all types of stimuli, such as various types of foods, histamine, and alcohol. Kugelmass [1] demonstrated that the administration of fruit juices with a pH of approximately 3.0 produced a greater volume of gastric juice than did juices with a higher pH. Claytor and co-workers [2] demonstrated a 75% greater increase in the volume of gastric juice after the ingestion of orange juice than after an Ewald test meal; however, no distinction was made between the response shown by patients with ulcers and that shown by normal subjects. Eberhard [3] compared the effects of orange juice and the Ewald test meal on free acidity in vivo and demonstrated that orange juice produced a greater increase in acidity both in patients with ulcers and in normal individuals. Some of the patients with peptic ulcers noted a regression of their symptoms when the administration of orange juice was discontinued. Dimmler and co-workers [4] found that the pH of gastric juice after an Ewald test meal ranged from 1.12 to 7.07, with a mode of 1.6 in 27 patients. They then added fresh orange juice in a ratio of one part of orange juice to three parts of gastric juice in vitro and found that the pH rose to a mode of 2.1. This was interpreted as representing a rise in pH after the ingestion of orange juice. Clark [4A] states that many clinical investigators believe that "adequate neutralization" may occur between a pH of 3.5 and 4.5, but not below 2.0.

The purpose of our study was to investigate the effect of reconstituted frozen orange juice upon gastric secretion in man in comparison with that of the potent stimulant betazole hydrochloride (Histalog).[5]

Method of Study

A total of 124 patients were studied. Of these, 44 gave histories indicative of a duodenal ulcer and x-ray studies confirmed the presence of ulcer craters. Eighteen patients had clinical studies indicative of ulcer, but x-ray examination failed to reveal evidence of an ulcer. In addition, studies were performed in 12 normal individuals and in 14 patients who had undergone a previous gastric resection or a gastroenterostomy. Only four of the patients who had undergone surgery showed free acid; only these were included in this report. Of the 124 patients, 46 showed no evidence of free acidity. As a result, these are not included in this report.

In each patient, four 15-minute basal specimens of gastric juice were obtained before the administration of betazole hydrochloride, orange juice, or other test substance. The patient was then given an injection of betazole hydrochloride in a dose of 0.5 mg. per kilogram of body weight; then four additional 15-minute specimens were obtained. The next day each patient was studied again, and after four 15-minute basal samples had been obtained, 120 ml. of orange juice at room temperature was administered through the Ewald tube. Other substances studied in this manner included: (1) an acetate buffer with a pH of 3.89 (the pH of frozen orange juice); (2) tap water; (3) distilled water; (4) citric acid; (5) ascorbic acid, 100-500 mg.; and (6) isotonic sodium chloride solution.

The volume of each 15-minute sample of gastric juice was measured and its pH determined with a Coleman 18 pH meter. Free acid was determined by titrating 5-ml. samples of the gastric juice to a pH of 3.5 with 0.1 *N* sodium hydroxide, with the use of a Coleman autotitrator, model 18. Total acid was then determined by titrating the samples of gastric juice to a pH of 8.2 in a similar manner. The results were expressed in milligrams, milliequivalents, and clinical

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units of free acidity. The values for clinical units were obtained by multiplying the total volume in milliliters for each sample by the number of milliliters of 0.1 *N* free hydrochloric acid. (The value for free hydrochloric acid is obtained by titrating a 5-ml. aliquot of gastric secretion against 0.1 *N* solution of sodium hydroxide and multiplying this value by the volume for each sample present.) Milliequivalents were obtained by multiplying the total volume for the hourly secretion by the total milliliters of free acid. Milligrams were obtained by multiplying the total volume by the total clinical units of free acid (milliequivalents) by the factor 0.0364. This factor is the milliequivalent weight of hydrochloric acid.

Gastric Secretions

Betazole hydrochloride produced a greater response in gastric acidity than did orange juice in the three groups studied: (1) the group of 12 normal patients, (2) the group of 44 patients with demonstrable duodenal ulcer, and (3) the group of 18 patients with symptoms of peptic ulcer in whom ulcers could not be verified by x-ray examination. In several individual cases, orange juice produced a greater response than did betazole hydrochloride.

Ordinary tap water produced greater stimulation than did the acetate buffer in patients with proved ulcers. Two patients with proved duodenal ulcers were admitted to the hospital for ulcer therapy. These patients were treated with the usual form of medical management consisting of administration of antacids and antispasmodics, and of sedation. In addition, they were given frozen orange juice several times daily. X-ray examination in both patients 10 days after the program had been initiated showed complete disappearance of the ulcer crater in each patient. Levels of blood ascorbic acid (method of Bessey [6]) ranged from 4.89 mg. to 5.5 mg. per 100 cc. in each patient prior to the administration of the orange juice and from 4.89 to 5.08 mg. per 100 cc. after its administration; the ascorbic acid levels showed no change. In addition, levels of blood ascorbic acid were determined in five of the patients included in the study. These values ranged from 4.61 to 6.18 mg. per 100 cc.

Comment

Many workers have compared the effects of orange juice with those of the Ewald test meal and have found a greater stimulation after the administration of orange juice than after an Ewald test meal. Dimmler and co-workers [4] suggested that the pH of orange juice (3.4) tended to raise the pH of patients with a lower pH of gastric juice (1.2). The tests were performed in vitro, however. The results of the present study showing what little effect the acetate buffer (buffered to a pH of 3.89, the pH of the frozen orange juice after dilution with water) has on gastric acidity would tend to minimize the effect of pH alone. Actually, tap water alone caused a greater stimulation than the acetate buffer.

Ascorbic acid is important in the healing of peptic ulcerations, as was first demonstrated by Rivers and Carlson.[7] The patients with ulcers who were hospitalized and given large amounts of orange juice had high levels of blood ascorbic acid even prior to the ingestion of orange juice. Several normal controls were found to have high levels also. This could well be attributed to the good nutritive state of the patients in our series and to the ingestion of vitamin supplements, although serum ascorbic acid levels are not always accurate as to ascorbic acid storage.

Although administered to a relatively small number of patients, frozen orange juice diluted one-half with water produced considerably less stimulating effect. The clinical significance of the increased gastric acidity after ingestion of orange juice remains to be determined, for, in spite of the fact that frozen juice was found to cause a high response to free acid, this did not impair healing when the usually accepted forms of ulcer therapy were administered.

Conclusions

Frozen orange juice is a potent gastric stimulant; however, when orange juice is given to patients with active duodenal ulcers while they are receiving the usual forms of medical management, no prolongation in the healing is noted. Frozen orange juice, when diluted half and half with water, does not give as potent a gastric stimulation. Further studies are indicated.

30 N. Michigan Blvd. (2) (Dr. ValDez).

This study was supported by the Florida State Citrus Commission.

The orange juice used in this study was prepared by diluting 180 ml. of frozen Florida orange juice concentrate to 720 ml. and administering 120 ml.

The ascorbic acid used in this study was supplied by Abbott Laboratories, North Chicago, Ill.

Because of space limitations, three tables have been omitted from THE JOURNAL and will be supplied with the author's reprints.

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SPECIAL ARTICLE

PRELIMINARY REPORT AND OBSERVATIONS ON THE 1956 POLIOMYELITIS OUTBREAK IN CHICAGO

WITH AN EVALUATION OF THE LARGE-SCALE USE OF SALK VACCINE, PARTICULARLY IN THE FACE OF A SHARPLY RISING INCIDENCE

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This is a report on Chicago's 1956 poliomyelitis outbreak, in which 1,111 cases of poliomyelitis (835, or 75.2%, confirmed paralytic cases and 276, or 24.8%, confirmed nonparalytic cases), including 36 deaths, were reported in Chicago residents in the city of Chicago. The outbreak lasted 16 weeks, and, on the basis of the date of onset of the disease, it started during the week ending June 21, reached its peak during the week ending Aug. 2, and ended during the week ending Oct. 4. (fig. 1). (The terms "outbreak" and "upsurge" are used throughout this report instead of "epidemic," inasmuch as the yardstick that we followed defined an epidemic as "a rate of 35 or more cases per 100,000" population.[1])

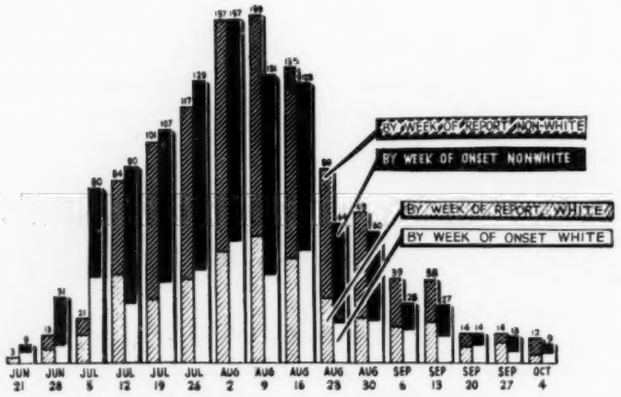

Fig. 1.—Three-dimensional bar graph showing number of poliomyelitis cases in Chicago residents in the city of Chicago, by week of report, by week of onset, and by race, for the period of the 1956 outbreak.

Of the 1,111 cases, virology reports have been received on 651. Of these 651 cases, a poliomyelitis virus has been successfully isolated from 412, and 99% of the viruses isolated have been identified as type 1.

During 1956, Chicago had the second highest incidence rate (29.2 cases per 100,000 population) for any one year since poliomyelitis records have been kept (1911) (table 1). In contrast, the nation at large had the lowest incidence rate (9.2 cases per 100,000 population) for any one year since 1947. During 1956, Chicago also had one of the lowest case-fatatity rates (3.2 deaths per 100 cases reported) for any one year since poliomyelitis records have been kept (1911).

On previous occasions Chicago has launched a number of intensive successful inoculation programs directed against such diseases as diphtheria, typhoid, and smallpox[2] and has been given credit for having done pioneer work in an epidemiologic approach to reducing maternal and infant (especially hebdomadal) death rates.[3]

With the announcement on April 12, 1955,[4] of the successful results of the 1954 field trials of Salk poliomyelitis vaccine, it was believed that the way might be open for the prevention and control of one more communicable disease. We were, therefore, desirous, as soon as sufficient Salk vaccine or any acceptable agent capable of protecting against poliomyelitis was available, of launching an intensive inoculation program with the hope of wiping out paralytic poliomyelitis, if at all possible, as thoroughly as diphtheria, typhoid, and smallpox had been wiped out in Chicago.

On April 16, 1955, Chicago received for the first time a limited supply of Salk poliomyelitis vaccine (124,380 cc.), which was allocated by directive from the Illinois Department of Public Health and specifically limited for grade-school children in the first and second grades. It was used for that purpose. With this limited supply of vaccine it was not possible to launch an intensive inoculation program. However, plans were developed for a full-scale inoculation drive as soon as sufficient supplies of vaccine were available.

On Oct. 25, 1955, Chicago received more Salk vaccine (75,006 cc.), which was available for the first time for distribution to physicians and was specifically limited by directive from the Illinois Department of Public Health to use in children from 5 through 14 years of age and pregnant women (see section "Chronological Description of Salk Vaccine Utilization in Chicago"). It was with this limited supply of vaccine that we were able to initiate a previously contemplated poliomyelitis pilot study. This study was not begun as a result of the 1956 outbreak, for it was already in progress by the time the outbreak started. The success of the inoculation program was contingent upon both vaccine availability and its acceptance by medical and lay persons.

President, Chicago Board of Health, and Collaborating Epidemiologist, Public Health Service, Department of Health, Education, and Welfare (Dr. Bundesen); Regional Medical Director, Public Health Service, Department of Health, Education, and Welfare (Dr. Graning); Chief Medical Officer, Chicago Board of Health (Dr. Goldberg); and Biostatistician and Chief, Public Health Methods, Chicago Board of Health (Mr. Bauer).

One of the key phases of the pilot study involved the inoculation of as many eligible persons as quickly as possible with three correctly spaced doses of Salk vaccine. (Eligible persons in Illinois were individuals of specified age groups, pregnant women, and first-grade and second-grade children [in the National Foundation program] who by directive of the Illinois Department of Public Health were eligible to receive state and federally purchased vaccine. The age groups varied from time to time; the dates of various directives showing the specific age group to whom vaccine could be given and the period each directive was in effect are as follows: Oct. 25, 1955, to April 10, 1956—5 through 14 years and pregnant women; April 11 to June 10, 1956—1 through 14 years and pregnant women; June 11, 1956, to date—6 months through 19 years and pregnant women.)

It was our belief that acceptable public health procedures indicated that the vaccine should be made available to Chicago residents, since the possible benefits to be derived from the use of the vaccine on a large scale, even in the face of a rising incidence, would be greater than the risk of any possible provocative effect. In addition we realized that our pilot study would give us data, making available a base for calculating poliomyelitis attack rates in the inoculated and uninoculated children.

With these data it should be possible to determine the prophylactic effectiveness of the Salk vaccine, especially when used as an emergency measure. However, until sufficient statistically significant data have been collected and evaluated, to determine precise measurements of our achievements, we must be cautious in making a decision as to the prophylactic effectiveness of the Salk vaccine as used in our pilot study. The evaluation of our available data is now in process. On the basis of what has already been evaluated, indications are that three correctly spaced doses of vaccine have given encouraging results. We are continuing to cooperate with medical groups to see that all eligible persons in Chicago receive three correctly spaced doses of Salk vaccine. (In the Chicago study, the inoculation schedule called for a period of two weeks between the first two doses and at least seven months between the second and third doses.)

Early Detection of the Outbreak

A constant and comprehensive weekly review and study of the available figures in the reports from the Public Health Service, Department of Health, Education, and Welfare, made it possible for us to determine that for the first five and one-half months of 1956 there was no unusually high total incidence of poliomyelitis throughout the country. The total incidence was far below the corresponding period of 1955 and the five-year median, 1951-1955. Our weekly statistical figures showed that there had been only 24 cases reported for Chicago for the entire 25 weeks from Jan. 1 through June 21, 1956. This did not constitute an unusually high number of cases for Chicago, nor did it indicate a significant rise that would warrant concern.

However, with the reporting of 13 more cases during the week ending June 28, we became aware of a sudden increase in the number of reported cases in Chicago. This awareness was based on a comparison of the 13 cases reported for the week ending June 28, 1956, with the 2 cases reported in the comparable period of 1955 (table 2). Eleven more cases were reported on June 29 and 30. Thus, by July 1, 48 cases had already been reported for the year 1956. These

TABLE 1.—*Number of Cases of Poliomyelitis, Paralytic and Nonparalytic, Reported as Having Occurred in Chicago Residents in City of Chicago: Incidence Rates, Number of Deaths, and Case-Fatality Rates, 1911-1956*

Yr.	No. of Cases	Incidence Rates*	No. of Deaths	Case Fatality Rates†
1956	1,111	29.2	36	3.2
1955	391	10.3	13	3.3
1954	661	18.0	24	3.6
1953	331	9.1	8	2.4
1952	1,203	33.0	82	6.8
1951	382	10.5	20	5.2
1950	538	14.9	37	6.9
1949	479	13.2	30	6.3
1948	312	8.7	10	3.2
1947	410	11.5	12	2.9
1946	750	21.3	49	6.5
1945	244	7.0	20	8.2
1944	174	5.0	7	4.0
1943	998	28.8	87	8.7
1942	165	4.8	9	5.5
1941	167	4.9	6	3.6
1940	190	5.6	15	7.9
1939	87	2.4	6	6.9
1938	27	0.7	1	3.7
1937	353	9.8	35	9.9
1936	241	6.9	24	10.0
1935	59	1.7	7	11.9
1934	93	2.7	8	8.6
1933	113	3.2	6	5.3
1932	49	1.4	9	18.4
1931	170	5.0	32	18.8
1930	192	5.7	25	13.0
1929	28	0.8	8	28.6
1928	25	0.8	8	32.0
1927	148	4.6	29	19.6
1926	28	0.9	3	10.7
1925	66	2.2	7	10.6
1924	67	2.3	2	3.0
1923	86	3.0	4	4.7
1922	49	1.7	15	30.6
1921	135	4.9	31	23.0
1920	78	2.9	8	10.3
1919	110	4.1	17	15.5
1918	96	3.7	25	26.0
1917	546	21.2	187	34.2
1916	285	11.3	49	17.2
1915	31	2.1	10	32.3
1914	53	2.2	10	18.9
1913	24	1.0	4	16.7
1912	135	5.9	22	16.3
1911	29	1.3	11	37.9

* Cases per 100,000 population.
† Deaths per 100 reported cases.

48 cases exceeded the number of cases for the same period of all previous years for which records were available in Chicago.

The early cases (24) of poliomyelitis reported in the city of Chicago (through June 21) were widely scattered, indicating possible general dissemination of the poliomyelitis virus. However, as the outbreak progressed (from June 22 through Oct. 4, the end of the outbreak), there was a continuing concentration of large numbers of cases predominantly in the 4-year-and-under age group of the nonwhite population in

the two high-incidence, lower socioeconomic, densely populated areas of the city, with but little dispersion into the contiguous areas.

It was felt at that time that, when a community is experiencing an increasing incidence of poliomyelitis and has not been in a position to prepare itself for such an event beforehand, the situation should be reevaluated. An analysis and a reevaluation of the above-mentioned 48 cases reported during the first six months of 1956 revealed that 19 cases were already concentrated in these high-incidence, lower socioeconomic areas. Fourteen of these 19 cases were reported in the nine-day period from June 22 through June 30, 1956. Since with this evaluation no contraindications to the use of the Salk vaccine presented themselves, the only recourse available, we believed, was to use the vaccine throughout the outbreak, since the possible benefits are greater than the possible provocative effects. Because of this we were desirous of vigorously intensifying our inoculation program. However, to continue our inoculation program, it was necessary that permission be obtained from the Illinois Department of Public Health, because of a directive dated May 25, 1956, which stated, "Inoculations with poliomyelitis vaccine can be continued into the summer until there is an increased prevalence of the disease. . . . Specific recommendations will be made for local areas with high incidence if indicated." Hence, the Chicago Board of Health on July 2, 1956, transmitted to the Illinois Department of Public Health complete information as to the sudden increased prevalence of poliomyelitis cases in Chicago at that time with a request that a recommendation be provided permitting our continuation of poliomyelitis inoculations.

TABLE 2.—*Number of Cases of Poliomyelitis, Paralytic and Nonparalytic, Reported as Having Occurred in Chicago Residents in City of Chicago, by Week of Report and Week of Onset, 1955 and 1956*

Total for		1955 Cases by Week of		1956 Cases by Week of	
		Report	Onset	Report	Onset
1st 22 weeks ending	5/31	20	24	13	19
2 weeks ending	6/14	5	4	8	8
Week ending	6/21	2	2	3	9
	6/28*	2	2	13	31
	7/5	2	1	21	80
	7/12	5	10	84	90
	7/19	6	10	101	107
	7/26	14	17	117	129
	8/2	18	22	157	157
	8/9	27	38	159	131
	8/16	45	50	135	128
	8/23	38	29	89	64
	8/30	39	42	69	60
	9/6	26	23	39	28
	9/13	31	29	38	27
	9/20	26	20	14	14
	9/27	18	13	14	13
	10/4	11	10	12	9
	10/11	8	8	5	2
	10/18	8	11	1	2
	10/25	11	5	3	1
	11/1	5	6	1	...
	11/8	6	4	4	1
	11/15	3	6	2	...
	11/22	6	1	2	1
	11/29	...	...	1	...
	12/6	3	2	...	...
	12/13	2	1	2	...
	12/20	1	1	4	...
	12/27	3	...	...	...
	12/31	...	...	...	...
Total		391	391	1,111	1,111

* On June 29 and June 30, 1956, there were 11 cases reported.

While awaiting this recommendation, one of us (H. N. B.), cognizant of the possible urgency of the situation, began to mobilize the total facilities under his direction and activated a plan that was based on the epidemiologic team concept and was amenable to the inclusion of all acceptable old and new control procedures. The experience gained in previous emergency situations had definitely taught that the integration of the experienced staff members into a smoothly functioning team would permit better use of their collective ability in the epidemiologic control of the disease. The work of this team was essential to the actual implementation of the new and important epidemiologic concepts that developed during the course of this pilot study.

During the period of rising incidence, emphasis was directed toward obtaining and maintaining a sufficient supply of vaccine for all eligible persons, especially those highly susceptible children 4 years of age and under. Vaccine purchased from public funds for free distribution could be obtained through private physicians or through numerous clinics that the board of health was instrumental in establishing in cooperation with other groups, such as the Chicago Medical Society.

From the time we first became aware of a sudden increase in the number of reported cases (June 29, 1956) through Aug. 31, 1956, 1,198,400 cc. of Salk vaccine was provided for eligible persons. The consensus was that the inoculations given after Aug. 31, 1956, would have little apparent effect on the course of the outbreak. In addition, 272,120 cc. of vaccine was purchased by private physicians through commercial channels in the same period of time. During the outbreak through Aug. 31, 1956, a combined total of 1,470,520 cc. of vaccine was used in eligible persons. In keeping with our plan to inoculate every eligible person possible, inoculations were continued through the months of September to December, 1956, inclusive, when a combined total of 304,925 cc. was given (table 3).

TABLE 3.—*Summary of Cubic Centimeters of Vaccine Distributed for Use by Chicago Physicians from April 25, 1955, to and Including Dec. 31, 1956*

Distribution of Vaccine	April 25, 1955, to June 28, 1956	June 29 to Aug. 31, 1956	Sept. 1 to Dec. 31, 1956	Total Vaccine Distributed
Vaccine issued to physicians by Chicago Board of Health	524,687	506,655	117,821	1,149,163
Vaccine used in inoculations at Chicago Board of Health clinics	275,146	416,281	101,169	792,596
Vaccine issued to special hospital clinics by Chicago Board of Health	...	275,464	...	275,464
Vaccine distributed to physicians of Chicago through commercial channels	113,517	272,120	85,935	471,572
Total vaccine distributed in Chicago	913,350	1,470,520	304,925	2,688,795

The Problems

The major problems facing the Chicago Board of Health were as follows:

1. To halt the rise of poliomyelitis if possible.

2. To determine the prophylactic effectiveness of Salk vaccine, *(a)* especially when used promptly in a mass inoculation program among the susceptible population in the face of an impending major outbreak and *(b)* when used throughout the entire season of high poliomyelitis incidence.

3. To obtain in sufficient quantity without delay supplies of *(a)* poliomyelitis vaccine and *(b)* needles and syringes. (Each inoculation was given with a separate sterile syringe and needle, in accordance with the request of the Chicago Medical Society. It was felt that 23-gauge, 1-in. needles were proper in length and thickness because [1] the 23-gauge needle was of sufficient size to allow free passage of the vaccine and yet was not large enough in gauge to cause appreciable destruction of tissue and [2] needles of this gauge and length had less tendency to bend or break when used than those of longer length and smaller diameter. In many instances, the board of health during the outbreak was offered shipments of needles of larger diameter, which were not accepted because they did not meet the requirements as specified above.)

4. To ascertain the cause of the sudden rising incidence of poliomyelitis and to discover the reasons for its occurrence in several specific geographical areas of the city without any appreciable spread to adjacent areas.

5. To alert the practicing physician, organized medicine, the individual, the parent, and all other responsible private and public health agencies to the acuteness of the situation and to their responsibility for seeing that eligible persons avail themselves of Salk vaccine.

6. To mobilize the personnel of the Chicago Board of Health at once into a well-integrated team, personnel being placed on a seven-day week, emergency basis, with all vacation and other leaves being canceled.

7. To aid in the coordination of the activities and the integration of the facilities of medical groups, such as the Chicago Medical Society, and auxiliary groups, such as the Chicago Hospital Council and the National Foundation for Infantile Paralysis, into a plan to limit the spread of the disease and thereby obtain the maximal effectiveness of such facilities and personnel.

8. To insure the immediate hospitalization of persons with suspected or confirmed acute cases of poliomyelitis as they were reported and to arrange for the later hospital care of the persons with acute cases in private hospitals after the acute stage had passed. (In this outbreak, 70% of all persons reported as having poliomyelitis were hospitalized in the Chicago Municipal Contagious Disease Hospital and 19% in the Cook County Hospital; 11% either were hospitalized in private institutions [7%] or their cases were not diagnosed and reported until after the acute stage was well over [4%].)

9. To arrange for the immediate removal from their homes of all persons having or suspected of having poliomyelitis, especially during its early, acute, highly infective stage and for their transportation to a hospital having suitable facilities for the care of such acute cases.

10. To evaluate at once the outstanding demographic characteristics of this outbreak, which were its presence predominantly in *(a)* children living in densely populated, lower socioeconomic areas, *(b)* the nonwhite population, and *(c)* children 4 years of age and under, and to concentrate our total control efforts in these groups in order to limit the spread of the outbreak if at all possible. The predominant demographic characteristics of the reported cases in 1956 were at variance with those of the cases in previous reported outbreaks in Chicago (since 1943). In our study it was found that poliomyelitis in those previous years usually occurred in the higher socioeconomic areas, predominantly in the white population, and in older children.

11. To investigate at once the various environmental health factors, such as the food, milk, water supplies and sewage disposal, swimming and wading pools, insect and rodent infestations, and the status of garbage disposal, as well as the adequacy and cleanliness of sanitary facilities in the home, particularly in the lower socioeconomic, high-incidence area, and to institute correctional measures where indicated. Further, to determine if possible any relationship between these factors and the prevalence of poliomyelitis in Chicago in 1956.

The solution of these 11 major problems listed above constituted the basis for the control measures taken in the 1956 poliomyelitis outbreak.

Control Measures Taken in the 1956 Poliomyelitis Outbreak in Chicago

Mobilizing and Marshaling of Key Personnel and Facilities.—The mobilizing and marshaling of our key personnel and facilities for the proposed mass poliomyelitis inoculation program were completed on July 9, 1956. It was also on this date that the advisory committee to the Illinois Department of Public Health advised, "Because of the high rate of poliomyelitis this early in 1956, all physicians are urged to continue vaccinating as many children as possible." During the following two days clinics were organized, additional parental consent forms were printed, and all necessary supplies were distributed.

On July 12, 1956, a most intensive mass poliomyelitis inoculation program was begun. On July 16, 1956, representatives from the Public Health Service, Department of Health, Education, and Welfare; the Illinois Department of Public Health; and others met in Chicago to develop procedures jointly for obtaining as accurate and complete epidemiologic information as possible concerning every reported case of poliomyelitis in Chicago in 1956. The data to be collected included the exact date of onset, paralytic status, history of previous tonsillectomy, clinical course, and the ultimate outcome of each case. Arrangements also were made for obtaining complete information as

to any history of poliomyelitis vaccination, dates and site of vaccine inoculation, the site of first paralysis, if any, and its degree. Special provisions also were made for collecting and examining all necessary laboratory specimens from the patients. The Illinois Department of Public Health laboratory performed all of the routine diagnostic blood and stool cultures on these specimens submitted by the board of health.

Those attending the meeting agreed with the need for the further intensification of the inoculation drive. Promises were obtained from the Illinois Department of Public Health for additional supplies of vaccine, as it was felt that with an intensive drive a critical shortage would develop, unless a large quantity of additional vaccine was forthcoming.

Poliomyelitis investigators from Yale and Western Reserve universities asked for, and obtained, permission to get laboratory specimens from families of certain poliomyelitis patients. Their findings, as yet unpublished, will be reported by Drs. Robert Melnick and Frederick C. Robbins.

The Public Health Service provided a team composed of physicians, a statistician, and clerical personnel for their field investigations. The activities of this team were coordinated by Dr. Neal Nathanson, chief of the poliomyelitis surveillance unit, Communicable Disease Center, Public Health Service. We anticipate that subsequent papers relating to the efficacy of Salk poliomyelitis vaccine will be issued in collaboration with him.

Using "Visual Aid Devices."—A number of new "visual aid devices" embodying new techniques of evaluation were developed and the older known epidemiologic procedures were amplified and used with greater skill as the outbreak progressed. These devices and techniques were used to alert all concerned to both constant and changing conditions that occurred throughout the course of the outbreak. These visual aid devices permitted immediate rearranging of the inoculation facilities day by day and week by week, as required, in the areas of high incidence to limit the spread of poliomyelitis. The devices used included (1) a three-dimensional bar graph (fig. 1), (2) a series of epidemiologic spot maps (large), (3) a series of epidemiologic spot maps (small), and (4) two seven-day moving-average line charts (fig. 2). (All visual aid devices are being maintained permanently as a public health exhibit at the offices of the Chicago Board of Health, so that they are available for reference and guidance with regard to future outbreaks and can be studied by interested persons.)

Three-Dimensional Bar Graph: A three-dimensional bar graph showed the daily trends of the distribution of the 1956 poliomyelitis cases, by race, by week of report, and by week of onset, during the upsurge and decline of the disease. This bar graph depicts the working model, which is constructed as follows: It is composed of three parallel rows of 32 cylindrical columns comprised of vertically stacked checkers. There are two cylindrical columns of stacked checkers for each week of the outbreak, one column colored red and representing date of onset of each case occurring during each week of the outbreak (June 21-Oct. 4) and the other column colored black and representing the date of report of the cases occurring each week during the outbreak.

The rear row represents the numerical distribution of cases in both white and nonwhite persons in 1956, the center row represents the numerical distribution of cases in nonwhite persons only, and the front row represents the numerical distribution of cases in white persons only. It was possible through the use of this device as the outbreak progressed to determine the trend of the cases well in advance on the basis of proportion of onset cases indicated for each week.

Epidemiologic Spot Maps: A series of large epidemiologic spot maps showed the geographical distribution and concentration of paralytic and nonparalytic cases by age of the patients and deaths by age, race, the inoculation status of all persons with reported cases, and the boundaries of the high-incidence and low-incidence areas in certain selected previous years and in 1956. A series of small epidemiologic spot maps showed the number of paralytic and nonparalytic cases by week of report and by week of onset during 1956 and the age, race, and geographical distribution of these cases.

It was through the series of small weekly epidemiologic spot maps used in conjunction with the three-dimensional bar graph that our entire epidemiologic team was able, week by week, to follow the progress of the poliomyelitis outbreak. These small maps clearly portrayed in a startling manner, as the outbreak progressed, current data that could not be obtained by the use of the large yearly epidemiologic spot map; specifically, they showed the exact distribution of the cases as they were occurring week by week and indicated any tendencies for the disease to disperse into contiguous areas or to contain itself in localized areas.

Seven-Day Moving-Average Line Charts: Two seven-day moving-average line charts showed poliomyelitis cases by race, both by date of report and by date of onset. (The seven-day moving average is the average number of cases each day for the seven previous days.)

Factors Pertaining to Use of Salk Vaccine in Chicago and Stimulating Lagging Acceptance

Chronological Description of Salk Vaccine Utilization in Chicago.—Chicago was not included in the 1954 poliomyelitis vaccine trials,[4] sponsored by the National Foundation for Infantile Paralysis. Hence, the first vaccine made available to the city was received on April 16, 1955, and amounted to 124,380 cc. This vaccine was designated to be used only in school children of the first and second grades and was supplied by the National Foundation for Infantile Paralysis, by allocation through the Illinois Department of Public Health. From April 25 to May 27, 1955, school children in the first and second grades received 107,149 first inoculations and 15,815 second inoculations, all of which were administered by medical personnel of the Chicago Board of Health. Inoculations were dis-

continued May 27, 1955, when all available vaccine had been utilized. (For a summary of vaccine distribution, see table 3.)

On June 10, 1955, a directive from the Illinois Department of Public Health was issued that stated: "No inoculations of poliomyelitis vaccine can be administered between July 1 and November 1 or later if the poliomyelitis prevalence is high at that time." The Chicago Board of Health adhered to this directive and did not give any poliomyelitis inoculations during the summer and early fall of 1955.

On Oct. 18, 1955, the Chicago Board of Health received a new supply of vaccine (90,846 cc.) from the National Foundation for Infantile Paralysis, again by allocation through the Illinois Department of Public Health. This vaccine was used for the second phase

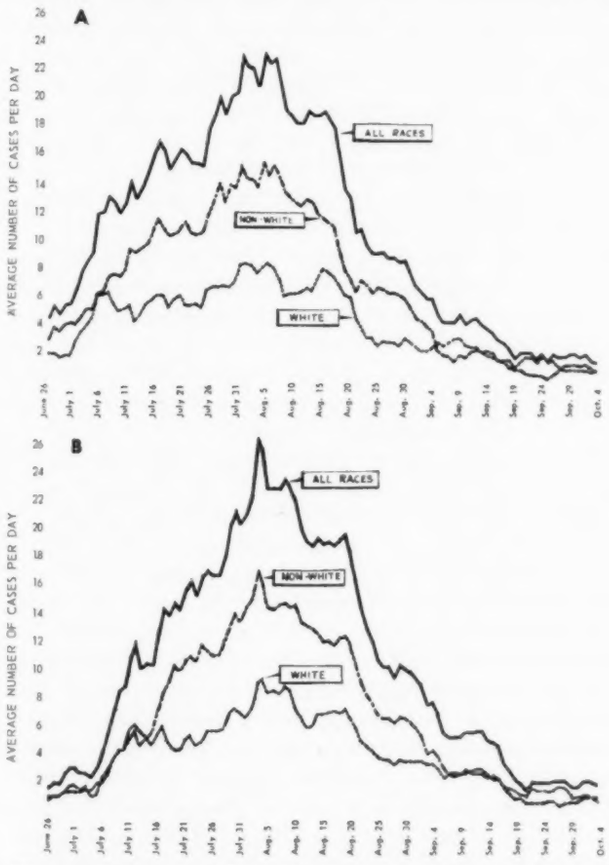

Fig. 2.—Line charts showing seven-day moving average of poliomyelitis cases June 28 to Oct. 4, 1956, *A*, by date of onset, and, *B*, by date of report, with day-by-day trends of 1956 outbreak for white, nonwhite, and all cases combined. (Seven-day moving average is average number of cases on any one day for preceding seven days.)

of the school inoculation program, by direction of the National Foundation, during which 66,226 second inoculations were administered to the school children who had received their first inoculations in the first phase of the program commencing in the spring of 1955. Inoculations were discontinued in the schools on Feb. 8, 1956, when all children in the first and second grades for whom parental consents for second inoculations could be obtained had been vaccinated.

On Oct. 25, 1955, the Chicago Board of Health received a supply of 75,006 cc. of vaccine, which was provided for the first time by federal funds and limited for usage in children from ages 5 through 14 and for pregnant women. This vaccine was for immediate distribution to practicing physicians for use among their eligible patients and also for use by physicians assuming the obligation of inoculating eligible persons in orphanages, institutions, and clinics serving low-income individuals.

Of the above amount of vaccine, only 8,496 cc. was requested and distributed to practicing physicians during November, 1955, but, during December, 1955, 45,639 cc. of vaccine was requested and distributed to them.

From Nov. 1, 1955, to April 11, 1956, children from ages 5 through 14 years (but not 4 years of age and under, in which age group, especially in the lower socioeconomic, densely populated areas, it was later shown to be most needed) and pregnant women received from their personal physicians 228,712 cc. of vaccine according to our records. During this same period, 15,459 cc. of vaccine was also made available for use by physicians assuming the obligation of inoculating eligible persons (children from ages 5 through 14 years and pregnant women) in orphanages, institutions, and clinics serving low-income individuals. Up to April 11, 1956, the largest proportion of these inoculations in low-income individuals were given by physicians of the staff of the Chicago Board of Health.

Requests from practicing physicians for vaccine did at times exceed our supply. However, at no time was any doctor denied a supply of vaccine sufficient for the immediate needs of his patients. During occasional brief periods of shortage, to assure a more equitable distribution of the available vaccine, it was at times necessary to limit temporarily the supply for a few days to only 1 cc. per eligible person rather than the usual 2 cc. per person as originally directed by the Illinois Department of Public Health. A day-by-day evaluation was made of the amount of vaccine on hand and the distribution to be made each day.

During the spring of 1956, children from ages 5 through 14 years in families on various Chicago relief and charity rolls received 11,885 first inoculations and 10,564 second inoculations. These inoculations were administered by the Chicago Board of Health medical personnel at the request of the Chicago Medical Society with vaccine purchased from federal and state funds.

On April 11, 1956, the Illinois Department of Public Health advised that vaccine could be given to children from 1 through 14 years of age and to pregnant women. This was the first time vaccine could be used for children 4 years of age and under. Both before and after this date, some commercial vaccine was available to private physicians, and a number of them had been able to give third inoculations to children from 5 through 14 years in the higher socioeconomic areas who had been given second inoculations during the spring and fall of 1955 in the early National Foundation school inoculation program. We believe, therefore, that the third inoculations that had been given by private physicians were administered early enough for these children to develop poliomyelitis immunity and probably had an impact on the ultimate geographical distribution of the outbreak.

In retrospect, because of the fact that state and federally allocated vaccine did not become available for use in children 4 years of age and under until April 11, 1956, there was not an adequate period of time before the beginning of the upsurge (week ending June 21, 1956) to inoculate these children with the full course of three correctly spaced doses of Salk vaccine. Further, because vaccine was not available for distribution by the board of health for a third inoculation for persons of any age group until June 11, 1956, and then only for persons inoculated prior to December, 1955, there was again not an adequate period of time before the beginning of the upsurge (week ending June 21, 1956) to inoculate any persons who had received their second inoculation after December, 1955, with the full course of three correctly spaced doses of Salk vaccine. It was, therefore, not possible that these groups as a result of the use of Salk vaccine developed sufficient poliomyelitis immunity levels before the beginning of the outbreak to have an ascertainable impact on its course, as it takes some time for the vaccine to build up immunity in a person.

From April 16 to June 1, 1956, with the availability of greater quantities of state and federally allocated vaccine and in preparation for the advent of the poliomyelitis season, pregnant women received 6,165 inoculations from personnel of the Chicago Board of Health in its prenatal stations.

From June 1, to 28, 1956, in keeping with the reported national experience at that time, that school-age children had been the most susceptible,[5] the Chicago Board of Health, with available vaccine then on hand, again visited the schools and administered 37,949 first inoculations and 2,741 second inoculations to elementary-school children (5 through 14 years). These inoculations were given by the Chicago Board of Health medical personnel with the remaining National Foundation vaccine and with state and federally purchased vaccine. Inoculations were discontinued in this school program on June 28, 1956, when the schools closed for summer vacation.

From Nov. 1, 1955, through June 28, 1956, practicing physicians had been carrying on an extensive inoculation program among their eligible patients. This was evidenced by their purchase of 113,517 cc. of commercial vaccine and in addition by the distribution to them of 524,687 cc. of vaccine by the Chicago Board of Health during that period. In addition, the board of health, during the same period, had administered 150,766 cc. of vaccine.

On June 11, 1956, the Illinois Department of Public Health directed that vaccine could then be given to children from 6 months through 19 years of age and to pregnant women.

In keeping with the desire of the Chicago Medical Society that the official health agency insofar as possible concentrate its efforts in low socioeconomic areas, the Chicago Board of Health established a large number of special clinics in the two low socioeconomic areas that were having a high incidence of poliomyelitis at that time. The establishment of these clinics was made on the basis of a continuing evaluation of the geographical distribution of cases reported. This distribution was determined through the utilization of the then available epidemiologic spot maps. Clinics were established throughout the outbreak on a daily and sometimes hourly basis in areas having critically high incidence.

In order to achieve the maximum possible inoculation status as quickly as possible in each child and since time was of the essence and the resources of the Chicago Board of Health had been mobilized to their maximum capacity, the president of the Chicago Medical Society and the council of the society joined forces with the Chicago Hospital Council and the Chicago Board of Health. As a result, supplementary poliomyelitis inoculation clinics were established in 58 hospitals, so as to inoculate as many persons as possible in the shortest period of time. Administrators and members of the hospital staffs assumed complete responsibility for the total operation of these hospital clinics. During the months of July through October, 1956, physicians of the Chicago Medical Society gave 275,464 inoculations at these special hospital clinics.

Stimulating Lagging Acceptance of Vaccine by Alerting the Populace Through Communications Mediums.—Our past experiences had taught us the importance of using without delay such mediums as the press, radio, television, and other available groups to their full extent. These mediums were used in this outbreak to remind parents and to urge them again and again, especially those in the low socioeconomic areas, to have their children inoculated with the recommended full series of three correctly spaced doses of Salk poliomyelitis vaccine.

The response from these groups was excellent: Stories were carried almost daily in Chicago newspapers reminding parents of the importance of obtaining inoculations for all children and especially those in the highly susceptible age group in the low socioeconomic areas. In addition, the press published lists of clinic sites and mobile inoculation units (an inoculating unit that is completely supplied and serviced by assigned physicians, nurses, and clerical personnel and is capable of being moved readily and rapidly from location to location). All of our releases urged parents to take their children to their family doctors and, if they could not afford private medical services, to take them to a clinic established for free inoculations.

To make it as convenient as possible for parents to have their children inoculated, it was at times necessary to decentralize operations insofar as practical in the high-incidence, lower socioeconomic areas. This was done by establishing numerous stationary clinics and mobile inoculating units so that no parent in such areas needed to take his child more than a short distance for inoculations.

Concurrent with the drive in the press, full cooperation was obtained from the radio and television stations. Television programs demonstrating inoculation techniques and explaining the poliomyelitis control program of the Chicago Board of Health were televised, with a number of them on nationwide networks.

Practicing physicians contacted their patients and families contacted their doctors, with a result that the demand for vaccine by practicing physicians for

administration to their patients increased sharply. As usual, the medical profession responded wholeheartedly as soon as the vaccine was available to them.

Sound trucks were utilized to acquaint the public with the exact location of clinics and the hours at which inoculations would be offered. Clinic sessions in the regularly established board of health clinics and in the mobile inoculation units were also provided on Saturdays, Sundays, and during evening hours for the convenience of parents who were not able to take their children for inoculations during the workday. Special clinics were also established in other sections of the city where there was need for such services, with special emphasis on housing projects and community centers.

It was the awareness of the seriousness of the poliomeylitis problem that prompted civic and fraternal groups; public, private, and parochial schools; many professional and lay volunteers; the Visiting Nurse Association; the Welfare Council of Metropolitan Chicago; members of the clergy; labor and management groups; the Mothers March of the National Foundation for Infantile Paralysis; and many other groups to respond so wholeheartedly to this program. All, working together, have rendered significant contributions to the Chicago pilot study. Practicing physicians were exceptionally cooperative and helpful.

Stimulating Lagging Acceptance of Vaccine in the Highest Incidence Area Through Personal Contact by a Door-to-Door Survey.—Because of the desirability not only of continuing the all-out inoculation campaign at a steady rate but also of stepping up the inoculation rate materially, now that more vaccine was available, it was felt that the personal contact that had been established prior to the outbreak, between board of health personnel and individuals residing in the lower socioeconomic, thickly populated, highest incidence area (the four localized subareas on the west side), should now be intensified and made more direct by a thorough survey involving door-to-door home visits. There were four small localized subareas in the thickly populated, highest incidence, lower socioeconomic west-side area. These four subareas were divided into assignments consisting of approximately one square city block for each investigator. These four subareas totaled but 5.2 square miles and contained approximately 180,000 persons, or about 5% of the city's population, and yet approximately 31% of all the poliomyelitis cases in the city of Chicago were occurring therein without the expected dispersion into the surrounding areas.

Therefore, with these important factors in mind, it was directed on July 31, 1956, that all Chicago Board of Health personnel, including the president and his entire executive staff, be utilized in immediately making this survey.

During the survey, which was completed within 10 days, special vehicles equipped with public address systems traveled continuously in these high-incidence, lower socioeconomic areas, urging parents to bring their children to their doctors or to the free clinics operated by the board of health throughout the area for the free inoculations.

The results of this survey disclosed one especially important factor with regard to Salk vaccine: At this time approximately 43% of the children in this congested area of highest incidence had not as yet received even one vaccine inoculation, notwithstanding the tremendous amount of urging done in the mediums of mass communication. Further, 46% of the most susceptible children, those that were 4 years of age and under, had not as yet received any vaccine inoculations.

However, the continuing close personal contact of our personnel during the survey with persons living in the high-incidence areas resulted in a greatly increased acceptance of vaccine by those segments of the population. This intensified use of personal contact in conjunction with the mass mediums of communication resulted in attaining an inoculation rate of over 18,000 eligible persons per day. Our experience has been that aggressive, persuasive, and almost daily personal contact is one of the most effective methods developed by us to arouse the public to acute public health problems, and this is especially true during acute emergencies.

Factors Pertaining to Epidemiologic Disease Control Measures Other Than Salk Vaccine

It was deemed important to investigate every reported case of poliomyelitis and all pertinent factors regarding the total environment in the highest incidence, lower socioeconomic area. Special attention was directed toward ascertaining the in-migration status of residents of these areas of highest incidence. Accordingly, our door-to-door survey was expanded to include these investigations in addition to determining the vaccinal status of persons in these areas.

Our personnel taking part in this door-to-door survey placed special emphasis on the following precautions: 1. All residents of this highest incidence, lower socioeconomic area were urged again and again to see to it that toilets were maintained in a clean condition and that their children, particularly those in the susceptible age groups, followed the basic fundamentals of good personal hygiene. Frequent washing of the hands, and by all means after using toilet facilities, especially was stressed. 2. All parents were urged to insure that their children, especially those in the susceptible age groups, obtained adequate rest and avoided crowds.

As an added precaution, early in the outbreak all public wading and swimming pools in the high-incidence areas were closed. Furthermore, through the cooperation of theater operators in these areas, all special programs for children were discontinued voluntarily in an effort to discourage the congregating of large groups of children in the susceptible age group.

Chicago Board of Health personnel aggressively intensified the enforcement of the food ordinances of the city, with special emphasis in these high-incidence areas on banning the operations of unlicensed vendors illegally dispensing flavored ices and other frozen-dessert products. Teams of plumbing inspectors surveyed the area in an effort to determine if housing in these lower socioeconomic sections contained ade-

quate toilet facilities. In cooperation with the Chicago Department of Water and Sewers, we collected samples of the water that was being supplied to these areas of highest incidence and made comparisons of the Escherichia coli count in these water samples and in the samples that had been collected in previous months and in other years. An attempt was made to correlate, if possible, the occurrence of poliomyelitis in these areas of highest incidence with any factors that might be present in the water supply. No correlation was found.

The door-to-door survey revealed the following information that is believed to have special epidemiologic significance: 1. The population in this 5.2-square-mile area was composed of 127,800 (71%) nonwhite persons and 52,200 (29%) white persons. 2. Approximately 46,800 (26%) of all persons in this area of high incidence were in-migrants (living in the area less than one year). 3. Approximately 37,000 (29%) of the nonwhite persons were in-migrants, whereas only 10,400 (20%) of the white persons were in-migrants. 4. Of the nonwhite in-migrants, 13,700 (37%) had paralytic poliomyelitis. As of this writing, the study has been completed pertaining to these nonparalytic cases. We reevaluated these cases by obtaining all current available information from all sources possible and especially by checking the hospital discharge diagnosis.

Of the 412 patients (both vaccinees and nonvaccinees) originally given a diagnosis of nonparalytic poliomyelitis, a total of 142 developed paralysis of varying degrees after their cases had been reported as nonparalytic, and the newly confirmed diagnoses were recorded.

Course of Poliomyelitis Outbreak on Basis of Date of Onset

To accurately chart the course of this outbreak and, more important, to institute and carry out our control measures where it was calculated they would be most effective, it was necessary to obtain date-of-onset information on every case of poliomyelitis as quickly as possible. To obtain this date-of-onset information and thereby be able to proceed on a sound epidemiologic

TABLE 4.—*Number of Cases of Poliomyelitis, Paralytic and Nonparalytic, Among Vaccinated Individuals (Chicago Residents), by Site of Inoculation, Site of First Paralysis,* and Interval Between Date of Last Inoculation and Onset of Illness†*

		Paralytic Cases										
			Inoculated in Arm				Inoculated in Leg					
Interval	Total No. of Cases	Total Paralytic Cases	Inoculated Arm	Uninoculated Arm	Both Arms	Neither Arm	Inoculated Leg	Uninoculated Leg	Both Legs	Neither Leg	Data Incomplete‡	Nonparalytic Cases
Total	375	279	9	9	7	180	2	2	6	3	61	96
Previous to inoculation	24	24	..	..	1	13	..	..	1	..	9	8§
0-7 days	163	128	6	7	4	84	1	..	1	2	20	35
8-14 days	70	48	..	..	..	37	..	..	..	..	11	22
15-30 days	62	45	2	2	1	25	1	2	..	1	11	17
31 days and over	56	34	1	..	1	21	..	..	1	..	10	22

* None of the persons with paralytic cases had received 3 inoculations of vaccine.
† Cases with onset Jan. 1 to Oct. 1, 1956. Does not include 12 cases still under investigation.
‡ Investigation complete, but exact site of inoculation not determined.
§ Persons with paralytic cases who were inoculated after onset of illness but prior to onset of 1st paralysis.
For those with nonparalytic cases, inoculations given after onset of illness are not included.

come to Chicago from the state of Mississippi. The state of Mississippi in 1956 had an early incidence of poliomyelitis and, according to available reports for 1956, ranked 11th in the incidence of poliomyelitis for all states reporting poliomyelitis. 5. Gross overcrowding in housing was found to exist throughout the high-incidence areas. 6. Many housing units were not provided with adequate toilet facilities, and many of such facilities were in poor repair. 7. Personal hygiene was at an extremely low level in the majority of households.

During the course of the outbreak, a study was made of all persons with paralytic and nonparalytic poliomyelitis who had a history of having received some Salk poliomyelitis vaccine. These cases were closely followed, and a final appraisal of each was made 90 days after the onset of the case (table 4).

Ninety days after most of the cases of poliomyelitis that had occurred in Chicago residents during 1956 had been reported, a recheck was instituted with regard to those cases, both paralytic and nonparalytic, in which the patients had no history of having received Salk vaccine. In this recheck, a special emphasis was placed on the cases originally diagnosed as nonparalytic poliomyelitis. As of this writing, the study has been completed pertaining to these nonparalytic cases. We reevaluated these cases by obtaining all current available information from all sources possible and especially by checking the hospital discharge diagnosis.

Of the 412 patients (both vaccinees and nonvaccinees) originally given a diagnosis of nonparalytic poliomyelitis, a total of 142 developed paralysis of varying degrees after their cases had been reported as nonparalytic, and the newly confirmed diagnoses were recorded.

Course of Poliomyelitis Outbreak on Basis of Date of Onset

To accurately chart the course of this outbreak and, more important, to institute and carry out our control measures where it was calculated they would be most effective, it was necessary to obtain date-of-onset information on every case of poliomyelitis as quickly as possible. To obtain this date-of-onset information and thereby be able to proceed on a sound epidemiologic basis, a system was developed early in the outbreak to obtain quick reporting of all cases of poliomyelitis. Staff physicians of the Chicago Board of Health visited daily those hospitals that cared for persons with known or suspected cases of poliomyelitis, so that, immediately on diagnosis of the case, date-of-onset information was available even prior to a formal detailed report being made by the hospital. This onset information was therefore available to us for immediate evaluation, and the usual lag of two to five days in receiving date-of-onset information was avoided. With the early knowledge of the date of onset and geographical site of poliomyelitis cases, we were able more promptly and with greater insight to plan and set into motion our control measures.

By using the all-important date of onset of the disease, instead of the date of report, to guide us day by day in accurately and quickly determining the course of the outbreak, we have designated Chicago's outbreak to be a period covering 16 weeks. On the basis of the date of onset of the disease, Chicago's outbreak started during the week ending June 21 with 9 cases (although only 3 cases were reported for that week) and progressed rapidly over a period of seven

weeks, when it reached its peak with a total of 157 cases for the week ending Aug. 2. The peak number of cases by date of report was not reached, however, until the following week (the week ending Aug. 9), when 159 cases were reported. It then took a downward course over a period of nine weeks and ended with nine cases for the week ending Oct. 4.

However, had we used the date of report of the disease, Chicago's outbreak would have started during the week ending June 28 and the peak would have been reached on the week ending Aug. 9, both dates being one week later than the dates of the actual outbreak and peak, on the basis of onset information.

Demographic Characteristics

The demographic characteristics that developed in Chicago in the 1956 outbreak are described in detail below.

A total of 63.4% (or about two-thirds) of all reported cases were in two high-incidence, lower socioeconomic areas, although these areas contained 31.5% (or about one-third) of the total population of the city and comprised 17% (or about one-sixth) of the total area of the city. A total of 61.6% of all reported cases were in the nonwhite population. Of these cases, 69.0% were in children 4 years of age and under. A total of 57.5% of all reported cases (in white and nonwhite persons) were in younger children (4 years of age and under). The percentage in this younger age group in Chicago is twice as great as that experienced on a nationwide basis over the past 12 years for which data are available, and similarly twice as great as that experienced in Chicago over the past 12 years for which data are available.

It is especially significant to note that the median age for these cases observed in the high-incidence, lower socioeconomic areas in 1956 was 3.4 years, while the median age for cases observed in the low-incidence, higher socioeconomic areas was 8.3 years.

These demographic characteristics are listed in table 5, which shows the number of cases of poliomyelitis, paralytic and nonparalytic, in Chicago by age group, racial classification, and paralytic status, with attack rates (number of cases per 100,000 population) for 1956, based on the 1955 population (latest estimate available).

Attention is directed specifically to the unusually high 1956 total attack rates in the nonwhite population (children 4 years of age and under): ages 1 (647.4), 2 (611.8), 3 (750.0), and 4 (450.0). Attack rates of this magnitude have never before been observed in Chicago in either the white or nonwhite population in this age group. For example, in 1952, the year of the largest poliomyelitis outbreak in the city of Chicago (1,203 cases and 82 deaths), attack rates in the nonwhite population were as follows: ages 1 (78.6), 2 (125.0), 3 (91.7), and 4 (200.0).

The first significant concentration of cases occurred in a lower socioeconomic area on the west side of Chicago, which eventually became the area of highest incidence. This west-side area included four small, somewhat separated, localized subareas of very high incidence. These subareas are surrounded and separated from each other by areas generally containing persons of a more stable population. These four localized high-incidence subareas in the west-side area totaled but 5.2 square miles and represented only 2.3% of the entire area of the city (223 square miles). However, these four subareas, containing only 4.7% (approximately 180,000) of the city's total population (3,800,000), ultimately contributed 31.0% of the total number of all cases reported.

TABLE 5.—*Number of Cases of Poliomyelitis, Paralytic and Nonparalytic, Reported as Having Occurred in Chicago Residents in City of Chicago and Attack Rates from Jan. 1 Through Dec. 31, 1956, by Age Groups, Race, and Paralytic Status*

Age, Yr.	Estimated Population	No. of Cases			Rates		
		Total	Paralytic	Nonparalytic	Total	Paralytic	Nonparalytic
All Races							
Less than 1	83,000	88	77	11	106.0	92.8	13.3
1	82,000	166	147	19	202.4	179.3	23.2
2	77,000	138	124	14	179.2	161.0	18.2
3	77,000	153	117	36	198.7	150.6	48.1
4	76,000	94	62	32	123.7	80.3	43.4
5-9	334,000	199	132	67	59.6	39.2	20.4
10-14	257,000	84	49	35	32.7	19.1	13.6
15-19	199,000	37	25	12	18.6	12.6	6.0
20-24	199,000	47	29	18	23.6	14.6	9.0
25-29	267,000	55	39	16	20.6	14.6	6.0
30-49	1,150,000	50	40	10	4.3	3.5	0.9
50 and older	998,000	...	...	...	...	...	...
Total	3,799,000	1,111	841	270	29.2	22.0	7.3
White							
Less than 1	62,000	26	22	4	41.9	35.5	6.5
1	63,000	43	36	7	68.3	57.1	11.1
2	60,000	34	30	4	56.7	50.0	6.7
3	61,000	33	26	7	54.1	42.6	11.5
4	62,000	31	22	9	50.0	35.5	14.5
5-9	272,000	80	50	30	29.4	18.4	11.0
10-14	210,000	55	33	22	26.2	15.7	10.5
15-19	163,000	24	18	6	14.7	11.0	3.7
20-24	161,000	34	19	15	21.1	11.8	9.3
25-29	211,000	38	26	12	18.0	11.4	6.6
30-49	947,000	29	21	8	3.1	2.2	0.8
50 and older	894,000	...	...	...	...	...	...
Total	3,166,000	427	303	124	13.5	9.5	4.0
Nonwhite							
Less than 1	21,000	62	55	7	295.2	261.9	33.3
1	19,000	123	111	12	647.4	584.2	63.2
2	17,000	104	94	10	611.8	552.9	58.8
3	16,000	120	91	29	750.0	562.5	187.5
4	14,000	63	91	23	450.0	278.6	171.4
5-9	62,000	119	82	37	191.9	130.6	61.3
10-14	47,000	29	16	13	61.7	34.0	27.7
15-19	36,000	13	7	6	36.1	19.4	16.7
20-24	38,000	13	10	3	34.2	26.3	7.9
25-29	56,000	17	13	4	30.4	21.4	8.9
30-49	203,000	21	19	2	10.3	9.4	1.0
50 and older	104,000	...	...	...	...	...	...
Total	633,000	684	538	146	108.1	84.4	23.7

The second significant concentration of cases occurred in another lower socioeconomic area on the near southeast side of Chicago, which eventually became the area of second highest incidence. This area totaled but 11.5 square miles and represented only 5.2% of the entire area of the city. Furthermore, this area, although containing only 15.8% (approximately 600,000) of the city's total population (3,800,000), ultimately contributed 20.6% of the total number of all cases reported and exhibited the same demographic characteristics as did the west-side high-incidence area.

The initial concentration of cases in the two high-incidence, lower socioeconomic areas became more intense as the upsurge progressed without the expected dispersion from these areas of concentration to adjacent areas, as had occurred in previous high-incidence years and as had been predicted by some.

Although our experience is that previous outbreaks of poliomyelitis in the city of Chicago were of a centrifugal nature, the incidence in the outbreak of 1956 remained relatively constant in the two high-incidence areas throughout the entire poliomyelitis season. This dichotomy of characteristics is of value to the epidemiologist and to the entire community and allows early predictions of the trend to be made on the basis of significant statistical data. A constant review of geographical distribution, with particular reference to weekly occurrence during an outbreak, provides invaluable guide lines as to whether the outbreak is destined to burn itself out relatively quickly or to spread from one area to another. The factors responsible for the delimitation of an outbreak are of particular interest to epidemiology.

The relative constancy of high incidence in 1956 in two localized lower socioeconomic areas in Chicago led us to make visual comparative studies of two other high years (1952 and 1943) by means of four other large epidemiologic poliomyelitis spot maps, in order to compare epidemiologic data of poliomyelitis cases in those high years with 1956. The largest outbreak ever experienced in Chicago according to our records was in 1952 (1,203 cases and 82 deaths); the next largest, other than 1956, was in 1943 (998 cases and 87 deaths).

The geographical distribution of cases of poliomyelitis, both paralytic and nonparalytic, for the years of 1952 through 1955 showed both greater incidence of cases in the higher socioeconomic areas and smaller incidence in the lower socioeconomic areas than in 1956.

In 1943, however, there was, as in 1956, a significant concentration of poliomyelitis cases in one of the four small localized subareas of the west-side area now involved, which in 1943 represented reasonably good but congested housing. By 1956, this same localized subarea in the west-side area, the population of which had changed almost entirely from white to nonwhite and had become much more infiltrated with many in-migrants and individuals of lower socioeconomic status, contained again a significant concentration of poliomyelitis cases.

Further, it is important to note that in this same west-side high-incidence area there is a significant difference in the median age of patients in cases reported for the year 1943 as compared with those reported in 1952 and 1956. For example, in the 5.2 square-mile west-side area (composed of four subareas) the median age in cases observed in 1943 was 8.0 years. At this time the area represented reasonably good but somewhat congested housing. The median age in cases observed in this same area in 1952 was 3.9 years, and the composition of the population residing in this area had changed considerably to nonwhite. In addition, the area had become much more congested. The median age in cases in this area in 1956 was 3.1 years, and the area had become extremely congested and the composition of the population residing in the area had changed almost entirely to nonwhite. The median age in cases in the entire city in 1943 was 8.5 years and in 1952 was 8.7 years, while in 1956 the median age was 4.1 years.

In 1952, only 11.5% of the persons with poliomyelitis in Chicago were among the nonwhite population, whereas, in 1956, 61.6% of the cases were among the nonwhite population. This 61.6% constitutes a complete change in racial composition from the average of 10.0% (ranging from 4.8 to 21.2%) found in poliomyelitis cases for all the years since such information has been available (1943). With this change in racial composition and with the cases occurring mainly in the crowded lower socioeconomic areas, there was a corresponding reduction in the median age in poliomyelitis cases for the entire city of Chicago from 1952, when the median age was 8.7, to 1956, when it had dropped to 4.1.

It is our belief that the lower median age in the poliomyelitis cases in Chicago's 1956 outbreak was related to both the concentration of cases in the very crowded lower socioeconomic areas and the fact that the greatest majority of these cases occurred among persons of the nonwhite population.

Evaluation of the Provoking Effect of Poliomyelitis Vaccine During an Outbreak

There has been considerable discussion concerning the use of poliomyelitis vaccine when the disease is occurring in epidemic or near epidemic proportions. The ability of certain preparations of pertussis, diphtheria, and tetanus antigens to "provoke" paralytic poliomyelitis has been documented in a number of studies.[6] These studies have shown that cases of provoked poliomyelitis occur within one month after injection, and that paralysis frequently involves the inoculated extremity. The possibility that poliomyelitis vaccine might show a similar ability to provoke paralytic disease was considered by one of us (H. N. B.) at the time he ordered the "all-out" inoculation drive early in the outbreak. However, at a meeting of a group of consultants called by the National Foundation for Infantile Paralysis, in June, 1955, it was the consensus that "the total preventive effect of the [Salk] vaccine in a period of rising poliomyelitis incidence should be much greater than the possible hazard from the provoking effect of the injections."[7]

"The first reported study of the mass vaccination of a population in which poliomyelitis was occurring at an epidemic rate" was carried out in Hawaii in late 1955, where 25,000 personnel and dependents were inoculated during an outbreak of 53 cases of the disease. "Epidemiological and clinical data did not reveal any evidence of a provoking effect [causing paralysis] due to injections of poliomyelitis vaccine."[8]

Our study of the use of poliomyelitis vaccine under near-epidemic conditions includes a detailed investigation of cases of paralytic poliomyelitis in which vaccination and onset occurred in Chicago from January through September, 1956, that was undertaken by a Public Health Service study group, working in cooperation with the Chicago Board of Health. Three hundred eighty-seven cases occurred during the period of study in persons who had received some

poliomyelitis vaccine, and, at the time of this writing, investigations had been completed on 375 of these cases. An analysis of the possible provoking effect, if any, of Salk poliomyelitis vaccine among these 375 vaccinees is presented in table 4.

In these 375 cases, 279, or 74%, of the persons developed paralysis, in either the arm or leg, or both, during the acute illness. It was possible to obtain information on the site of last poliomyelitis inoculation for 218 of this group with paralytic cases; 205 had been inoculated in the arm and 13 in the leg. In the 205 paralytic cases in which the site of inoculation had been the arm, first paralysis included one or both arms in 25 cases. Among these 25, first paralysis included the inoculated arm in 9, the opposite uninoculated arm in 9, and both arms in 7 cases. Of the 13 persons with paralytic cases who had been inoculated in the leg, initial involvement included one or both legs in 10 cases. Among these 10, first paralysis included the inoculated leg in 2 cases, the opposite leg in 2 cases and both legs in 6 cases.

Clearly, first paralysis developed as frequently in the opposite uninoculated as in the inoculated limb. Thus, there is no evidence in our large series of 375 cases that prior inoculation of poliomyelitis vaccine influenced the localization of subsequent paralysis.

Tonsillectomy as a Factor in the Development of Bulbar Poliomyelitis

The relationship of the absence of tonsils to the development of bulbar poliomyelitis has been discussed ably by Anderson and Rondeau.[9] In their study of 2,669 cases of poliomyelitis, both paralytic and nonparalytic, there were 1,043 cases in which there was a history of tonsillectomy and 1,626 cases in which there was no history of tonsillectomy. Investigation of these cases revealed that 382 (36.6%) of the 1,043 patients with a history of tonsillectomy developed bulbar poliomyelitis. In contrast to this, it was found that only 153 (9.4%) of the 1,626 patients with no history of tonsillectomy developed bulbar poliomyelitis. With these findings, Anderson and Rondeau stated: ". . . It has been found that persons with the bulbar type of poliomyelitis give a history of removal of the tonsils more frequently than do persons with other forms of poliomyelitis and that, if clinically recognizable poliomyelitis develops in a person who has had his tonsils removed, the likelihood of bulbar involvement is four times as great as in one whose tonsils are in situ. This higher proportion of cases of bulbar involvement in patients who have had tonsillectomy occurs at all ages regardless of the time that has elapsed since operation" (table 6).

The relationship of the absence of tonsils to the development of bulbar poliomyelitis has also been evaluated by us. In our study of 739 cases of poliomyelitis, both paralytic and nonparalytic, on which information was available as to whether tonsillectomies had been performed, there were 68 cases in which there was a history of tonsillectomy and 671 cases in which there was no history of tonsillectomy. Investigation of these cases revealed that 24 (35.3%) of the 68 patients with a history of tonsillectomy developed bulbar poliomyelitis. In contrast to this, it was found that only 74 (11.0%) of the 671 patients with no history of tonsillectomy developed bulbar poliomyelitis. Therefore, we have concluded that, if clinically recognizable poliomyelitis develops in a person who has had his tonsils removed, the likelihood of bulbar involvement is three and one-half times as great as in one whose tonsils are in situ. In our series, the higher proportion of cases of bulbar involvement in patients who had had tonsillectomy also occurs at all ages regardless of the time that had elapsed since operation.

The proportion of bulbar involvement is lower among persons with poliomyelitis who have their tonsils in situ than in those who have had a tonsillectomy. As would be expected, therefore, Chicago had a lower proportion of bulbar cases in 1956 than in other of its outbreaks. The case-fatality rate in the bulbar cases of poliomyelitis is usually higher than among other forms of the disease. Therefore, the smaller percentage of bulbar cases found in Chicago in 1956 was reflected in the lower total case-fatality rate.

TABLE 6.—*Data on Patients with Poliomyelitis, Paralytic and Nonparalytic, Who Gave a History of Tonsillectomy, by Type of Infection*

Type of Poliomyelitis	Total No. of Cases		With Tonsillectomy		Without Tonsillectomy	
	No.	%	No.	%	No.	%
Minnesota, 1946*						
Bulbar	534	20.0	382	36.6	153	9.4
Spinal	1,844	69.1	560	53.7	1,284	79.0
Nonparalytic	290	10.9	101	9.7	189	11.6
Total	2,669	100.0	1,043	100.0	1,626	100.0
Chicago, 1956						
Bulbar	98	13.3	24	35.3	74	11.0
Spinal	405	54.8	21	30.9	384	57.3
Nonparalytic	236	31.9	23	33.8	213	31.7
Total	739	100.0	68	100.0	671	100.0

* Data from Anderson.[9]

It should be stated that the importance of having tonsils removed when clinically indicated in the presence of certain medical conditions and the benefits derived therefrom far outweigh the possible danger of bulbar involvement should the individual develop poliomyelitis. It is our belief that this danger would be minimized if the individual who has had a tonsillectomy performed would avail himself of the protection afforded by three properly spaced doses of Salk poliomyelitis vaccine.

Lessons Learned

The 12 most important lessons learned as a result of the 1956 experience with a large-scale outbreak of poliomyelitis in Chicago and in which large amounts of Salk vaccine were administered during the course of the outbreak are as follows:

1. When a community is experiencing an increasing incidence of poliomyelitis and has not been in a position to prepare itself for such an event beforehand, the situation should be reevaluated and, if no contraindications present themselves, the only recourse available, we believe, is to use Salk vaccine or any acceptable agent capable of protecting against poliomyelitis throughout the outbreak, since the possible benefits are greater than the possible provocative effects. Further, if these inoculations are continued throughout the outbreak and after the outbreak is over, with the intention of giving the full course of

three properly spaced inoculations well before the beginning of the following year's outbreak, the community would probably have, as a result of this, a higher immunity level and should be better prepared to face a similar situation if it occurs in the future.

2. An all-out effort should be made to see that each known or suspected case of poliomyelitis is reported as soon as the diagnosis is made, so that complete and accurate information will be available early in an outbreak to show just where the cases are occurring day by day and week by week. It was evident early in the Chicago outbreak that there was a considerable lag in the reporting of cases of poliomyelitis to the board of health. This early lag in reporting cases was based on failure to make a prompt report after diagnosis, or upon the difficulty of making a positive diagnosis, particularly in nonparalytic or mild paralytic cases of poliomyelitis, or upon the lack of full understanding of the epidemiologic importance and necessity of reporting the disease early to aid in controlling its spread. This lag in reporting of cases was vividly called to our attention, first through the use of the three-dimensional bar graph (fig. 1) that was made operative starting the week ending July 12, and was later confirmed also through the use of the weekly epidemiologic spot maps.

3. The date of onset of the disease should be used in contrast to data pertaining to the date of report of poliomyelitis cases to determine better the trend of the outbreak.

4. Early cognizance should be taken of the trends of an outbreak based upon the daily maintenance, study, and evaluation of all current statistical data. As an example, data pertaining to demographic characteristics, such as (*a*) socioeconomic status, (*b*) race, and (*c*) age of patients in all reported cases was found to be especially significant in the Chicago outbreak. The utilization of such information permitted us to concentrate and intensify a substantial portion of our disease-control effort on individuals within the most susceptible groups.

5. The diagnosis of each case of poliomyelitis, both paralytic and nonparalytic, should be reviewed and be rechecked 90 days later, using all current, available information from all sources possible to determine the latest confirmed diagnosis and the paralytic status of the patient. A check on the 418 cases reported as nonparalytic in Chicago in 1956 revealed the startling fact that, after the original diagnoses were made and the acute stage was over, confirmed paralysis of varying degrees became apparent in 148 of these cases. Since the original diagnoses had been reported to the board of health, the changes in diagnosis were not further reported. Had these diagnoses not been rechecked and the newly confirmed diagnoses recorded, the records of the outbreak would not have been correct.

6. With the appearance of the first case of poliomyelitis in a community, the health officer should be aware of and on the alert for the possibility of a major outbreak. Complacency engendered through either the lack of a current outbreak or failure to study and to compare the week-by-week trends in the local jurisdiction with those in other localities should be avoided.

7. A flexible basic plan for the control of poliomyelitis should be available and adaptable to the integration of any new control procedures. This plan should be made operative immediately whenever there is an impending outbreak of poliomyelitis.

8. An adequate, closely knit, well-trained epidemiologic team with high staff morale should be organized from among the members of the department and should include the key executives. This team should be adaptable at a moment's notice to immediate mobilization. The combined knowledge and collective ability of the individual members of this trained team will lead to a better understanding of the many daily problems and essential factors that pertain to the control of an outbreak of poliomyelitis.

9. "Visual aid devices" should be used so that it is possible for all concerned to be throughly familiar with and to observe closely the day-by-day trends of the data for both date of onset and date of report as well as the demographic characteristics that are of particular epidemiologic significance in any outbreak of poliomyelitis.

A separate epidemiologic spot map should be prepared for each week of the outbreak, showing the geographical and age and race distribution of the cases of poliomyelitis occurring that week. This spot map will indicate any tendencies for the disease to disperse into contiguous areas or to contain itself in localized areas.

10. Close cooperation and full exchange of information should be maintained between all interested groups. Such close cooperation permits the exchange and evaluation of epidemiologic information.

11. An intensive public health education program should be started early to reassure the public concerning the safety of the use of Salk vaccine, even in the face of an upsurge of the disease, as well as all other epidemiologic measures taken by the local health authority in the control program and to alert them to their responsibilities. Awareness on the part of the public to their responsibilities should be based on an immediate full disclosure by the health officer of all of the epidemiologic techniques and other protective measures as they become available. An informed public is essential if the greatest possible degree of public participation is to be obtained in an all-out effort to combat an outbreak of poliomyelitis. Emphasis should be placed on public health education especially in the lower socioeconomic areas, where it is most needed and where it was found by us, and others, that a definite lack of interest in environmental health programs, as well as acceptance of vaccine, has usually occurred. It is vitally important to educate the residents of the lower socioeconomic areas to the great need for maintaining a clean, wholesome enviroment for their families.

12. When a communicable disease that presents a major public health problem occurs, direct personal contact by means of home visits should be instituted by the board of health especially in the areas where cases are occurring and, in addition, in the surrounding contiguous areas into which there may be a dispersion of the disease. This personal contact will act as a supplement to the mass communication mediums

and will aid in the dissemination of public health information and program promotion where it is most needed.

The application of the basic epidemiologic concepts embodied in the above lessons, learned during the course of the poliomyelitis outbreak in Chicago in 1956, permitted us to more wisely and with greater skill make a thorough investigation and have more adequate control in preventing the spread of poliomyelitis in Chicago.

The basic principles in these 12 lessons are also applicable to the control of the outbreaks of other communicable diseases.

Comment

With 1,111 cases of poliomyelitis reported during 1956, Chicago had an excellent opportunity to gather enough meaningful data through its pilot study to be in a position, upon the completion of the analysis of the available data, to make a statistically significant appraisal of the effectiveness of Salk poliomyelitis vaccine and some of the results achieved through its use in Chicago. Our pilot study included the inoculation of all eligible persons, for whom consents could be obtained, with three correctly spaced doses of formalinized (killed-virus) antipoliomyelitis vaccine (Salk vaccine) throughout the upsurge and thereafter.

It was the consensus that the possible calculated risk involved in the use of the Salk vaccine in this large-scale pilot study, even in the face of a rising incidence, would be far less than the risk involved in not making available to Chicago residents the protection the vaccine could afford. Subsequent results, in our opinion, validated this decision.

Statistics gathered in this study indicate that there has been no provoking effect (triggering subsequent paralysis in the inoculated limb) by Salk vaccine even when given in the face of a rising incidence as experienced in Chicago.

We believe that the scientific determination of the degree of efficiency of Salk vaccine has been reinforced by the 1956 experience and the results that were achieved with its use throughout the nation as a whole. However, any evaluation of its effectiveness as used in Chicago during the high-incidence situation cannot be compared with the evaluation of its effectiveness in communities that had already achieved a sufficiently high immunity level prior to an increased incidence situation as a result of a significant number of persons having received the required three properly spaced doses of antipoliomyelitis vaccine.

We feel, however, that the Chicago findings are of unusual interest, and, pending the completion of a more detailed analysis and evaluation of our available data, we offer the following information:

In the 1,111 cases of poliomyelitis reported in Chicago in 1956, 835 persons developed paralytic poliomyelitis. Of these 835 persons, 285 did receive some Salk vaccine. (Cases in 12 persons who had received vaccine were reported after the field work had been completed on the analysis of cases in vaccinated persons on Oct. 1. Six of these cases were paralytic. Therefore, this figure of 285 is 6 greater than the paralytic cases shown in table 4.) Some estimate of the effectiveness of Salk vaccine in preventing paralytic poliomyelitis, according to the number of doses of Salk vaccine given among the 285 persons with poliomyelitis in our series who had been inoculated, can be made from the following data: 200 had received only one inoculation, 85 had received but two inoculations, and not one had received the recommended full course of three correctly spaced doses of Salk poliomyelitis vaccine. Twenty-four of these 285 persons who received vaccine, however, did not receive it until they were actually developing poliomyelitis.

By October there were 125,000 children who had received one inoculation, 600,000 who had received two inoculations, and 300,000 who had received the full course of three inoculations. Two hundred cases of paralytic poliomyelitis had developed among the children with one inoculation, 85 among the children who had had two inoculations, and no case among children who had had the full course of three inoculations.

It is significant to note that our survey indicates that, as of July 1, 1956, 125,000 children had already received three inoculations and not one of this group developed paralytic poliomyelitis.

Furthermore, of the 36 persons whose death from poliomyelitis was reported in Chicago in 1956, 8 did receive some Salk vaccine. Of these eight persons, six had received only one innoculation, two had received but two inoculations, and not one had received the recommended full course of three inoculations.

A survey was made of the school children in the city of Chicago to obtain information as to the number and dates of Salk vaccine inoculations that they had received. These data were punched into approximately 700,000 IBM cards and were tabulated, thus making the inoculation status of Chicago school children available for study. With these data, estimates were then made of the inoculation status of all of the 1,150,000 persons in Chicago who were 6 months through 19 years of age.

As of the first week of August, 1956, when the poliomyelitis upsurge was in full swing, of the 1,150,000 children in Chicago 6 months through 19 years of age, it is estimated that 425,000 had received no inoculations of Salk vaccine, 250,000 had received one inoculation, 325,000 had received two inoculations, and only 150,000 had received all three inoculations. On the basis of the 430 paralytic poliomyelitis cases that had their onset prior to Aug. 2, the paralytic attack rate as of that time was 76.1 in the 425,000 children who had had no inoculations, 30.0 in the 250,000 children who had had one inoculation, 7.1 in the 325,000 children who had had two inoculations, and 0 in the 150,000 children who had received the full course of three inoculations.

As of the first week of September, 1956, when the poliomyelitis outbreak was on the downward trend, of the 1,150,000 children in Chicago 6 months through 19 years of age, it is estimated that 175,000 had received no inoculations of Salk vaccine, 225,000 had received one inoculation, 500,000 had received two inoculations, and 250,000 had received all three inoculations. On the basis of the 694 paralytic poliomyelitis cases that had their onset prior to Sept. 6, the paralytic attack rate as of that time was 246.9 in the 175,000

children who had had no inoculations, 82.2 in the 225,000 children who had had one inoculation, 15.4 in the 500,000 children who had had two inoculations, and 0 in the 250,000 children who had received the full course of three inoculations.

As of the first week of October, 1956, when the poliomyelitis outbreak was considered to be at an end, of the 1,150,000 children in Chicago 6 months through 19 years of age, it is estimated that 125,000 had received no inoculations of Salk vaccine, 125,000 had received one inoculation, 600,000 had received two inoculations, and 300,000 had received all three inoculations. On the basis of the 726 paralytic poliomyelitis cases that had their onset prior to Oct. 4, the paralytic attack rate as of that time was 358.4 in the 125,000 children who had had no inoculations, 154.4 in the 125,000 children who had had one inoculation, 14.2 in the 600,000 children who had had two inoculations, and 0 in the 300,000 children who had received the full course of three inoculations.

In past years, the sex distribution of poliomyelitis cases in other areas of the country has generally been 55.0% male and 45.0% female. In the Chicago outbreak of 1956, the sex distribution was 50.6% males and 49.4% females.

In addition, in further estimating the effectiveness of the vaccine, it should be noted that in the northern quarter of the city, an area known as a high socioeconomic area and typical of a number of other higher socioeconomic areas in Chicago, there was a low incidence of poliomyelitis. This was an area of 50 square miles, wherein a million people live and where there are over 300,000 persons in the group eligible to receive vaccine. In this territory more than 600,000 doses of Salk poliomyelitis vaccine have already been given. These inoculations were distributed among 15,000 children who had one inoculation, 165,000 who had two inoculations, and 85,000 who had all three inoculations.

Our records show that there were only 94 cases of poliomyelitis reported in 1956 in this northern quarter of the city. In these 94 cases, 59 persons developed paralytic poliomyelitis. Fourteen of the 59 patients who developed paralytic poliomyelitis gave a history of having received Salk vaccine: 8 had received only one inoculation, 6 had received but two inoculations, and not one had received the full course of three inoculations of Salk vaccine. There were only two deaths in this area.

On the other hand, our records show that there were 704 cases of poliomyelitis reported in 1956 in the two high-incidence, lower socioeconomic areas of the city, which have an estimated population of 1,200,000. In these 704 cases, 552 persons developed paralytic poliomyelitis. One hundred eighty-nine of the 552 persons who developed paralytic poliomyelitis gave a history of having received Salk vaccine: 138 had received only one inoculation, 51 had received but two inoculations, and not one had received the full course of three inoculations of Salk vaccine. There were 27 deaths in these two areas.

Thus, the northern quarter of the city had an attack rate of only 9.4 per 100,000 population, compared with the two high-incidence, lower socioeconomic areas, which had an attack rate of 58.7 per 100,000 population. Therefore, poliomyelitis occurred 6.2 times as frequently in the high-incidence, lower socioeconomic areas of the city as it did in the northern quarter of the city.

Not only did poliomyelitis occur less frequently in the northern quarter of the city, but the proportion of paralytic cases was significantly smaller (62.7%) as compared with the proportion of paralytic cases that occurred in the high-incidence, lower socioeconomic area (78.4%). In the northern quarter of the city, the proportion of persons with paralytic cases who had received one or two inoculations of Salk vaccine was significantly lower (23.7%) than it was among like inoculated individuals in the high-incidence, lower socioeconomic areas of the city (34.2%).

We believe that the lower attack rate, 9.4 per 100,000 population, in the northern quarter of the city as compared with a rate of 58.7 per 100,000 population in the high-incidence, lower socioeconomic area, as well as the lower proportion of paralytic cases, 62.7% in the northern quarter of the city as compared with 78.4% in the high-incidence, lower socioeconomic areas, was due to a variety of factors. Among these factors are those listed below:

1. In areas such as in the high-incidence, lower socioeconomic areas where there was an intense concentration of poliomyelitis cases, especially in persons in the lower age groups, the percentage of paralytic poliomyelitis cases has generally been found to be greater.

2. The lower proportion of paralytic poliomyelitis cases in the northern quarter of the city as compared with that in the high-incidence, lower socioeconomic areas, we believe, was due in part at least to the fact that the socioeconomic status of individuals was higher in the northern quarter of the city and as a result doctors were more readily available, resulting in more cases of nonparalytic poliomyelitis being diagnosed and reported.

3. We also believe that the lower attack rate and the lower proportion of paralytic cases in the northern quarter of the city and similar low-incidence, higher socioeconomic areas, as compared with the high-incidence, lower socioeconomic areas, was due at least in part to the fact that there was a greater proportion of persons living in those areas who had been inoculated with Salk poliomyelitis vaccine. Many of these persons received through their physicians the recommended course of three inoculations before the beginning of the upsurge in June, 1956. This, we believe, played a part in raising the immunity level in this area to a higher point than that which was reached in the lower socioeconomic areas.

It is not yet possible to attribute the low incidence of paralytic poliomyelitis in this northern section of the city, and in other areas of the city where the percentage of persons inoculated with three doses of Salk poliomyelitis vaccine was also high, to the early widespread use of Salk vaccine in these areas before the beginning of the 1956 outbreak, but inferences based on careful observations, by one of us (F. C. B.) indicate the possible effectiveness of the vaccine. The curve described by the 1956 outbreak was different from that usually found in most previous outbreaks in the city of Chicago, although it was somewhat similar to that of the 1943 outbreak. In 1956,

only 45% of the cases had their onset after the peak was reached, whereas, in other years, including 1943, at least 50 to 60% of the cases had their onset after the peak was attained. Only time will tell whether the poliomyelitis vaccine administered during the outbreak had an effect on reducing the number of cases that would ordinarily have occurred after the peak. We have assumed, however, that, in those cases where three properly spaced inoculations of poliomyelitis vaccine were given, the vaccine had beneficial effects in producing antibodies and hence was responsible at least in part for limiting the spread of the outbreak.

It is our impression that, if a community has not achieved a sufficiently high immunity level prior to an increased incidence of poliomyelitis, it is practically impossible, in spite of tremendous public support and good vaccine acceptance, to achieve immunity levels sufficiently early to have a substantial impact on the outbreak.

Our material is still in the process of being gathered and evaluated, and the results of these evaluations will permit further analysis and a more definitive critical appraisal.

54 W. Hubbard St. (10) (Dr. Bundesen).

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COUNCIL ON DRUGS

Formerly the Council on Pharmacy and Chemistry

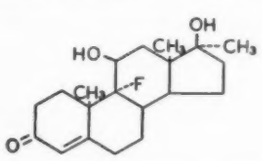
NEW AND NONOFFICIAL DRUGS

Formerly New and Nonofficial Remedies

Monographs and supplemental statements on drugs described here and in subsequent editions of New and Nonofficial Drugs are based on the evaluation of available scientific data and reports of investigations. Applicable commercial names for preparations of evaluated drugs are listed at the end of monographs and parenthetically in the text of supplemental statements; additional commercial names of which the Council is informed will be included with subsequently published supplemental statements and annual editions of New and Nonofficial Drugs.

H. D. KAUTZ., M.D., *Secretary.*

Fluoxymesterone.—9α-Fluoro-11β-hydroxy-17α-methyltestosterone.—The structural formula of fluoxymesterone may be represented as follows:



Actions and Uses.—Fluoxymesterone, an orally effective synthetic halogenated derivative of 17α-methyltestosterone, produces all of the metabolic and clinical effects of methyltestosterone and testosterone propionate but is more potent than either of these. In animal studies, the drug is approximately 10 times as potent as equal amounts of methyltestosterone, from the standpoint of both androgenic and anabolic effects. In clinical practice, fluoxymesterone appears to be about five times as potent as the nonhalogenated compound. Excretion of nitrogen, potassium, and calcium is appreciably reduced after therapeutic doses. Since retention of sodium is minimal, edema ordinarily is not a complication of clinical use.

Fluoxymesterone is an effective anabolic and androgenic agent. Although it is difficult to evaluate its comparative potency in each of these areas, available

evidence points to approximately equal protein-sparing and masculinizing effects. Thus, weight gain with a positive nitrogen balance usually follows its administration. Satisfactory responses also may be expected when the drug is used for replacement therapy in primary hypogonadism or testicular hypofunction or, in the female, for the treatment of menorrhagia and metrorrhagia. In a relatively small number of patients with advanced metastatic carcinoma of the breast, fluoxymesterone has produced subjective and objective improvements. Decreases in blood and urinary levels of calcium, recalcification of osseous metastases, regression of soft-tissue lesions, and relief of pain have been reported. However, the ultimate evaluation of fluoxymesterone in comparison with testosterone propionate for the palliation of mammary cancer will require further study.

Side-effects referable to fluoxymesterone are similar to, but no more troublesome than, those produced by the other androgens, natural or synthetic. Thus, in the male, excessive dosage or prolonged administration may cause inhibition of testicular function, with resultant oligospermia. In the female, large doses may produce virilization as evidenced by hirsutism, deepening of the voice, enlargement of the clitoris, regression of the breasts, and acne; occasionally, nausea and gastrointestinal upsets occur. The obstructive jaundice and hepatic damage sometimes observed after administration of methyltestosterone have not been reported after use of fluoxymesterone. More clinical experience, especially observations after long-term administration, will be necessary to eliminate the possibility of deleterious effects on the liver and other organs by this drug. As with all androgens, fluoxymesterone is contraindicated in patients with prostatic carcinoma.

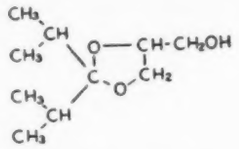
Dosage.—Fluoxymesterone is administered orally. Dosage varies with the condition being treated, its severity, prior androgenic therapy, and individual response. The total daily dose may be administered at one time or in three or four divided doses.

For anabolic effects, the average dose for adults ranges between 4 and 10 mg. per day. For complete replacement therapy in eunuchs, doses up to 10 mg. per day may be given. In lesser degrees of testicular hypofunction, daily doses of 2.5 to 5 mg. are usually sufficient. In menorrhagia, 5 to 10 mg. is administered daily for one week prior to the onset of menstruation. In metrorrhagia, a similar daily dose is employed until bleeding has been controlled; dosage is then decreased to 2.5 to 5 mg. daily. For the palliation of inoperable carcinoma of the breast, daily doses of 6 to 20 mg. have been used; however, clinical experience indicates that, for appreciable results, at least 10 mg. and preferably 20 mg. must be administered each day. Treatment must generally be continued for three months or more before objective responses become evident. At this dosage range, definite virilizing effects usually result.

Applicable commercial name: Halotestin.

The Upjohn Company cooperated by furnishing scientific data to aid in the evaluation of fluoxymesterone.

Promoxolane.—2,2-Diisopropyl-1,3-dioxolane-4-methanol.—The structural formula of promoxolane may be represented as follows:



Actions and Uses.—Promoxolane produces some skeletal muscle relaxation via an ascending noncurariform action on the spinal cord and a mild depression of the central nervous system. Pharmacologically, the relaxant effects are apparent at lower dosage than is the central nervous depression. The action on the spinal cord is believed to be due to a depressing effect on the spinal neurons. Promoxolane, therefore, cannot be classified as a tranquilizing agent in the same sense as chlorpromazine or reserpine; its mode of action is similar to that of meprobamate.

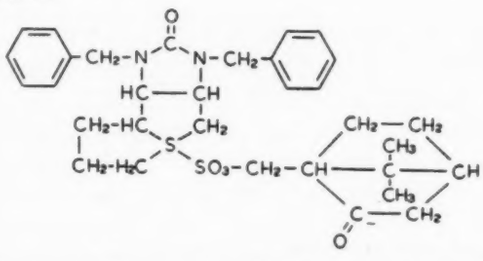
Promoxolane is proposed for clinical use as a calming agent in the symptomatic treatment of a wide variety of organic and functional disorders in which anxiety tension is the common denominator. Conclusions of its usefulness for this purpose are based upon case reports of clinical observers who noted beneficial effects after oral administration to a number of patients suffering from postalcoholic psychomotor agitation, menopausal symptoms, dysmenorrhea, "occupational stress," poliomyelitis, and arthritis. Favorable effects have been reported clinically; however, evidence from adequately controlled studies is lacking to prove conclusively that the tension-relieving effects observed were caused by the action of the drug. Clinical usefulness of promoxolane as a calming agent has not been established by the double-blind technique. From the available reports promoxolane would appear to be without appreciable toxicity. Side-effects are apparently limited to occasional gastrointestinal upsets and drowsiness.

Dosage.—Promoxolane is administered orally. For the relief of anxiety tension, the proposed dosage for adults is 0.5 to 1 Gm. four times daily.

Applicable commercial name: Dimethylane.

The National Drug Company cooperated by furnishing scientific data to aid in the evaluation of promoxolane.

Trimethaphan Camphorsulfonate.—*d*-3,4-(1′,3′-Dibenzyl-2′-ketoimidazolido)-1,2-trimethylenethiophanium *d*-camphorsulfonate.—The structural formula of trimethaphan camphorsulfonate may be represented as follows:



Actions and Uses.—Trimethaphan camphorsulfonate, a ganglionic blocking agent with direct vasodilator actions, lowers diastolic and systolic blood pressure

in both normotensive and hypertensive subjects. After intravenous administration, a hypotensive response occurs almost immediately, and this persists for 10 to 20 minutes after discontinuation of therapy. Under ordinary conditions of use, trimethaphan camphorsulfonate will not depress blood pressure beyond a certain minimal (floor) level. Once this level has been reached, further administration of the drug produces no additional reduction of blood pressure but, instead, prolongs the recovery period to normotensive levels. There is also evidence that tachyphylaxis can occur, but this is not common.

Owing to its evanescent duration of action, trimethaphan camphorsulfonate is not suitable for the routine medical management of hypertensive patients. However, this property makes the drug valuable in certain other situations in which the rapid production of hypotension, subject to minute-to-minute control, is clearly required. Since the hypotensive effect of the drug is mediated, in part, by direct vasodilation, some degree of hemostasis from capillary beds or small venules and arterioles follows its administration. Thus, the drug finds its principal use in certain neurosurgical procedures in which excessive bleeding obliterates the operative field to such an extent as to make the operation excessively hazardous or even impossible. Such procedures include craniotomies for arteriovenous anomalies, intracranial aneurysms, and vascular tumors. Judicious induction of controlled hypotensive anesthesia in such situations allows for a relatively bloodless field and, hence, better visualization and exposure, with more rapid completion of surgery. Because of its rapid action and the usual prompt return of blood pressure to normotensive levels after withdrawal, trimethaphan camphorsulfonate is clearly better suited than hexamethonium or other ganglionic blocking agents for this purpose. It should be emphasized, however, that while a reduction in blood loss is important, this per se is not the primary purpose for hypotensive anesthesia. Rather, this technique is intended as a means of making possible certain neurosurgical procedures that would otherwise be impossible or seriously handicapped by excessive bleeding. Induced hypotension in pelvic or vascular surgery is still considered experimental.

Although the production of controlled hypotension in anesthesia comprises the most important clinical use of trimethaphan camphorsulfonate, it may also be tried as a temporary expedient in the control of crises and encephalopathies associated with systemic hypertension, in pulmonary edema due to hypertension, and possibly in acute hypertensive toxemia of pregnancy. In these instances, however, the drug offers no advantages over any other potent hypotensive agent. There are reports of its successful employment as a hemostatic agent for acute epistaxis in hypertensive patients and for the control of subdural and subarachnoid hemorrhage in patients with severe head injuries.

The hypotensive response to trimethaphan camphorsulfonate is subject to wide variations; some patients (especially those in the supine position) exhibit minimal responses with even high doses. Hence, careful attention to dosage with frequent determinations of blood pressure is imperative. In addition, patients under induced hypotension generally require less anesthetic than when their blood pressure is at normotensive levels. Pupillary dilation can occasionally occur, thus masking the usual eye signs of the various stages and planes of anesthesia. It is therefore axiomatic that the drug be administered only by anesthesiologists experienced in its use. In skilled hands, hypotensive anesthesia can be achieved safely with a minimum of serious reactions and side-effects. Tachycardia, not necessarily associated with increased myocardial irritability, is a potential complication. Respiratory depression must also be guarded against, particularly if a skeletal muscle relaxant is being administered concomitantly. The drug is potentiated by procainamide and should be administered cautiously with this or other myocardial depressants. It is pharmaceutically incompatible with thiopental, thiamylal, gallamine, strongly alkaline solutions, iodides, or bromides but may be administered concurrently with these agents, using another vein. Side-effects or undue hypotension resulting from overdosage or idiosyncrasies may be antagonized by suitable vasopressors such as methoxamine, phenylephrine, or ephedrine. Epinephrine is considered too hazardous for this purpose because its sudden onset of action is difficult to control and because it may increase cardiac irritability. Since the mere prolongation of hypotension in the systolic ranges of 80 to 100 mm. Hg is generally not harmful, it is probably unnecessary and unwise to administer vasopressor agents routinely for the sole purpose of hastening the return of blood pressure to normotensive levels. The contraindications to trimethaphan camphorsulfonate are the same as those for other ganglionic blocking agents, including shock (regardless of cause), severe atherosclerosis, polycythemia, renal or hepatic damage, and any condition in which there is inadequate blood volume or circulation to a vital organ.

Dosage.—For hypotensive anesthesia, trimethaphan camphorsulfonate is administered by continuous intravenous infusion as a 0.1% solution (1 mg. per cubic centimeter) in either 5% dextrose in water for injection or isotonic sodium chloride solution. The rate of infusion is determined by the susceptibility of the individual patient to the drug and by the requirements of the surgeon. In the average patient this will vary from 1 to 4 mg. per minute, but it should be adjusted to provide the highest pressure compatible with the most satisfactory conditions for surgery. Infusion should not be started at the beginning of surgery but only at that point in the operation when visualization and exposure are complicated by excess bleeding. When this phase of the procedure is completed, administration of the drug should be discontinued gradually. At no time should the systolic pressure be allowed to fall below 60 mm. Hg or, in hypertensive patients, below two-thirds of the usual level. The patient should be carefully watched for indications of peripheral vascular collapse.

Applicable commercial name: Arfonad Camphorsulfonate.

Hoffman-La Roche Inc. cooperated by furnishing scientific data to aid in the evaluation of trimethaphan camphorsulfonate.

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"ADDICTION-PRODUCING" VERSUS "HABIT-FORMING"

GUEST EDITORIAL

Nathan B. Eddy, M.D.

Addiction has existed since man discovered that the juice of the poppy would relieve his ills, but the term as applied to drug use and recognition of the condition as a community problem are relatively modern, both following the introduction of the hypodermic syringe a little more than a century ago. "Drug habit" and "habit-forming" are much older terms. Intensive research into drug addiction is much more modern, inaugurated, or, rather, greatly accelerated, by the establishment of the first federal hospital for the treatment of drug addicts at Lexington, Ky., 20-odd years ago. Coincidently many attempts have been made to define addiction, emphasizing at one time or another pharmacological, psychiatric, legal, or practical aspects. Tatum, Seevers, and Collins in 1929 had already defined addiction and habituation separately. "Addiction," they said, "is that condition of mind and body induced by drugging which requires a continuation of that drug, and without which a serious physical or mental derangement results." Habituation meant to them a condition wherein one becomes accustomed to but not seriously dependent upon a drug. Himmelsbach, confining his attention to the opiates, emphasized that addiction to them embraced tolerance, habituation, and physical dependence as intricately interwoven and interdependent phenomena. Lindesmith would have us believe that addicition is a social phenomenon only, a matter of our attitude toward a drug and its effects. Some legally minded persons would call all nonmedical use of drugs addiction, and, finally, the Expert Committee on Drugs Liable to Produce Addiction, of the World Health Organization, attempted a practical definition that would include all of the drugs that are presently subject to a regimen of rigid control internationally and nationally. The World Health Organization committee wrote not one but two definitions, trying to clarify what it believed to be a continuing ambiguity in the use of terms.

Drug addiction is a state of periodic or chronic intoxication produced by the repeated consumption of a drug (natural or synthetic). Its characteristics include:
(1) an overpowering desire or need (compulsion) to continue taking the drug and to obtain it by any means;
(2) a tendency to increase the dose;
(3) a psychic (psychological) and generally a physical dependence on the effects of the drug;
(4) an effect detrimental to the individual and to society.

Drug habituation (habit) is a condition resulting from the repeated administration of a drug. Its characteristics include:
(1) a desire (but not a compulsion) to continue taking the drug for the sense of improved well-being that it engenders;
(2) little or no tendency to increase the dose;
(3) some degree of psychic dependence on the effect of the drug, but absence of physical dependence and hence of an abstinence syndrome;
(4) a detrimental effect, if any, primarily to the individual.

In Germany *Sucht* and *Gewöhnung*, in France *toxicomanie* and *accountumance*, and in this country "addiction-producing" and "habit-forming" have been commonly confused; in fact, they have often appeared to be used interchangeably in lay, legal, and scientific speech and writing. Since "drug habit" and "habit-forming" were the older terms, it is not surprising that they continued to be used in their original sense of "addiction" and "addiction-producing" after these terms were introduced and after attention had been drawn to addiction as more than simply habituation. Unfortunately, "habit-forming" was used also where only habituation was meant and consequently took on a dual meaning. The confusion in terminology and in the degree of risk involved was not diminished when the Federal Food, Drug, and Cosmetic Act required that preparations of certain substances and their derivatives must bear a warning label, "May be habit-forming." The expression "habit-forming" was used, it was said, because it would be more generally understood, but the group of substances to which it was to be applied was heterogeneous, including some that were recognized as capable of producing addiction and others that could be accused then and now of producing habituation only. Obviously it is desirable to warn against the possibility both of addiction and of habit formation, but, since these dangers vary considerably in degree, a clear distinction should be made as to whether a drug is liable to produce addiction or merely liable to produce habituation.

The need for clarification is accentuated by the constantly increasing number of drugs in our armamentarium. There are, on the one hand, the drugs that produce morphine-like effects, including the development on repeated administration of all of the characteristics of a morphine addiction, although that condition may develop at a different rate and with a different intensity. There are also the many drugs, old and new, that have sedative properties and that, because they give some easement of tension, tend to promote a habit in those who take them. For most persons the risk in the use of the latter group is only one of some degree of habituation. However, abuse,

Chief, Section on Analgesics, National Institutes of Health, U. S. Department of Health, Education, and Welfare.

i. e., use in an amount appreciably beyond the therapeutic level, of some of them can set into operation the phenomena of physical dependence.

Surely it is our duty as physicians—in fact, it is the duty of all concerned—to have clearly in mind the risks involved with addiction-producing and habit-forming drugs, to issue the proper warning as necessary, and to protect, so far as possible, the ultimate consumer, the patient, against those risks. It is reasonable to suppose that the performance of this duty will be facilitated by the careful employment of the appropriate terms in legislation, in regulations, or in any other text or situation. The World Health Organization definitions, it is hoped, will be useful guides to that end.

WARNING AGAINST HOXSEY TREATMENT

On page 28 of the advertising section of this issue of THE JOURNAL there appears a reduced reproduction of the Federal Food and Drug Administration's public warning of the dangers involved in patronizing the Hoxsey cancer treatment. Readers of THE JOURNAL may wish to remove the page and post it conspicuously in their offices. The government warning has been distributed to post offices and other federal buildings for posting.

This unusual activity on the part of an agency of the federal government is necessitated by reason of a concentrated campaign by Mr. Hoxsey and others who not only claim merit for the treatment but are petitioning Congress, through those who are in sympathy with them, to investigate the Federal Food and Drug Administration's efforts to stop Hoxsey's misrepresentations.

In April, 1956, the Food and Drug Administration issued a warning and thereby notified the public that the Hoxsey treatment was not only useless but imminently dangerous if it was relied upon in neglect of competent and rational treatment.

The government was successful in 1953 in obtaining an injunction against the interstate distribution of liquid mixtures containing potassium iodide and herbs in water, or potassium iodide and lactate of pepsin, for the treatment of internal cancer. After this action, Mr. Hoxsey substituted certain black or red pills, the composition of which, he claimed, was identical to that of the liquid preparations.

A large quantity of these pills was seized in Pittsburgh in March, 1955. It was not, however, until October, 1956, that the matter was heard in federal court in Pittsburgh. The government demonstrated the worthlessness of the Hoxsey method, and the seizure was upheld by a federal court and jury in November, 1956. At this writing a motion for a new trial is still to be heard; yet the possibility remains that, if such motion is lost, an appeal will be filed by Hoxsey. In the meantime, he and his agents remain "in business."

Concerning the activities spearheaded by a Mr. Gerald Winrod, who publishes a magazine of alleged religious quality, there has been a considerable response on the part of a surprisingly large segment of the population, directed to the Congress, asking for a congressional investigation of the Food and Drug Administration. It is suggested, particularly to those physicians who have seen the effects on cancer patients who have attempted to obtain relief through patronizing the Hoxsey Clinics, that they write their congressmen, outlining briefly such experience. These physicians and others may wish to express their appreciation of the need of this agency to develop a continuing educational and enforcement program against this and other forms of quackery. The work that this agency does in the protection of the public in this country cannot be measured in terms of dollars and cents; yet it operates on one of the lowest budgets in the government.

The Hoxsey promotion may be the greatest immediate problem, but it is well appreciated that there are other so-called treatments or cures that merit federal regulatory action.

HOSPITAL WEEK—A HOSPITAL CAREER

Approximately one out of every 50 employed persons in the United States works in a hospital, with the larger hospitals requiring personnel to do as many as 200 different kinds of jobs. Despite the fact that there are more than 1,300,000 full-time hospital workers, the increased need for personnel in the hospital field has been so great over the past years that a personnel shortage still exists.

May 12-18 of this year is National Hospital Week. The American Hospital Association, in annually sponsoring this program to improve the public's awareness of the services and facilities a hospital provides for a community, has selected as the theme for 1957 "Careers That Count."

The hospital is really a team of skilled workers dedicated to serving the people of a community and in so doing to provide the continued highest standard of care in both illness and disaster. To maintain the hospital at peak efficiency requires a constant supply of new personnel. To the public, physicians and nurses are apt to represent the hospital, but, because physicians and nurses greatly appreciate their cohorts in the broad fields of diagnosis and treatment, it is hoped that they will assist their community hospitals with recruitment, by participating in community education programs on the opportunities and rewards offered by the many different kinds of hospital careers.

Helping people to get well is probably the most rewarding career one can have, and there is no greater challenge for performing this type of service than in a hospital. Hospitals are always considering the community. It would not be out of line for a community, under the leadership of its physicians and medical societies, to consider the hospital not just as a place to aid in the healing of the sick but as its professional responsibility. In so doing, a special service could be rendered in furthering public interest in hospital careers.

THE PRESIDENT'S PAGE

A MONTHLY MESSAGE

The first annual report of the Joint Commission on Mental Illness and Health is now on my desk. This is the commission formed by the American Medical Association and its Council on Mental Health in combined effort with the American Psychiatric Association and a score of other national professional and lay groups with a working commitment to reduce mental illness and improve mental health. The Commission is doing a three-year study of mental health in the United States. Its report is expected to be ready in 1959.

The first annual report is large and thick, amounting to several hundred pages and approximately 50,000 words. What is more amazing and gratifying than its mere size, however, is (1) how much was accomplished in the first year, starting from scratch, and (2) how much the study encompasses. Its over-all objective, of course, is to make factual findings on where we stand in relation to what we know about caring for the mentally ill and promoting mental health, and to make recommendations to the mental health professions, to legislators, and to the public on what should be done next.

By the end of 1956, the Commission had a central study staff of 17 persons and 44 persons on its task forces and study projects. I understand that by April 1 the staff had grown to 19 and the task and project forces to 77, exclusive of 150 interviewers engaged in one nationwide survey.

One of the first steps of the staff, with the help and supervision of the Commission, as well as the advice of committees of experts in various fields, was to design the study. This blueprint was based on the assumption that within persons and within the nation are (*a*) forces that tend to be health-promoting, growth-producing, and personality-strengthening and (*b*) forces that tend to be disintegrating, illness-producing, and disorganizing in terms of the personality.

The design provides ways of approaching these positive and negative forces by examining the life experiences of Americans on a sampling basis and by observing the hospitals, clinics, physicians, and schools and other agencies of society aiding in development of mental health—agencies to which people turn when in need of help.

By the first year's end, a series of eight studies were in progress (as may be seen, the nation's number 1 health problem—the care and management of patients with major psychiatric disorders—has first priority):

1. A study of patient care in mental hospitals, mental health clinics, and private psychiatric practice.
2. A study of the rehabilitation of the mentally ill.
3. An evaluation of what is known or believed about the factors that produce mental health.
4. A nationwide sampling survey aimed at determining what kinds of mental troubles Americans feel they have and what they do about them.
5. A study of the role of schools in mental health.
6. A study of mental health research facilities and operations.
7. A study of nonmedical community resources aiding the mentally ill.
8. A study of the sources and training of personnel in the care of the mentally ill.

Other studies now have been scheduled, including the epidemiology of mental illness, ex-patient groups engaged in mutual self-help, and family life. The blueprint also calls for approximately 15 other studies if additional funds can be raised in 1957.

Recently, the study director, Dr. Jack R. Ewalt of Boston, offered the consultation services of his research experts in implementing a series of single-community studies. These studies would help the communities develop a mental health program and provide data in depth comparable to those to be obtained in the nationwide survey of what people say troubles them and where they take their troubles.

In general, the unique contribution of the over-all study will be to explore intensively and extensively the vast body of information available about mental illness and health in our society and to integrate and synthesize such information into a manageable, yet all-inclusive, total picture.

I believe the A. M. A. can take a great deal of pride in its leadership in bringing this study about.

DWIGHT H. MURRAY, M.D., Napa, Calif.

ORGANIZATION SECTION

STATEMENT BY DR. HUGH H. HUSSEY JR. ON H. R. 2125 BEFORE SUBCOMMITTEE ON MILITARY OPERATIONS OF HOUSE COMMITTEE ON GOVERNMENT OPERATIONS

I am Dr. Hugh H. Hussey, of Washington, D. C., and a member of the Board of Trustees of the American Medical Association, on whose behalf this statement is presented. Accompanying me today are Dr. Harold C. Lueth, Chairman of the Committee on Civil Defense of the Association's Council on National Defense, and Mr. Frank W. Barton, Secretary of that Council.

The American Medical Association took keen interest in the extensive hearings on civil defense conducted last year by the Military Operations Subcommittee. That inquiry not only served to define and analyze the varied and complex problems concerning national survival from nuclear attack, but, in our opinion, it has made the public more aware of all phases of civil defense at the federal, state, and local level. Equally important, those hearings documented the urgent need for increased emphasis on this relatively neglected aspect of national defense. I would like to take this opportunity to commend the Chairman and the members of this Subcommittee for their serious effort to strengthen the civil defense of our country.

With your permission, Mr. Chairman, I should like to discuss briefly the basic philosophy and position of the American Medical Association in regard to civil defense. Dr. Lueth will then address himself to the pending bill, H. R. 2125.

Prior to enactment of the Federal Civil Defense Act of 1950, the Association realized that the medical profession should provide leadership in the civil defense program at all levels of government. In June, 1950, the Association urged the immediate passage of federal and state enabling legislation and the immediate establishment of state civil defense organizations. The Association notified the President of the United States, the Chairman of the National Security Resources Board, and the secretary of each constituent state medical society of this action.

The Association further realized that individual members of the medical profession would have the task of preparing and operating the medical programs for the care of mass casualties. We, therefore, urged the establishment of emergency medical service committees by each of our constituent state and territorial medical associations. I am happy to say that committees of this type have been in operation in all of the constituent societies for a number of years.

At its annual meeting in June, 1956, our House of Delegates restated its grave concern over the present inadequacy of our national civil defense effort. It urged that an efficient and practical medical civil defense plan be developed by the best minds in our nation as an absolute prerequisite to national survival, and it further urged physicians, individually and in associated bodies, to assume responsibility for preparing and providing for the management and care of mass casualties in the event of enemy attack.

The Association agrees that civil defense, like military defense, is an integral part of national defense and that the federal government must provide the leadership, direction, and coordination to promote a strong civil defense program. It is idle to complain of public apathy in civil defense so long as official apathy is obvious. The American people cannot be expected to respond unless they are informed, organized, and trained in the principles of civil defense. If we are to protect and preserve our civilian resources, everyone must clearly recognize the need for greater federal responsibility and participation. To that end, the American Medical Association pledges its continued support, assistance, and cooperation.

With your permission, Mr. Chairman, Dr. Lueth will now discuss the pending bill in relation to the policy which I have just stated.

STATEMENT BY DR. HAROLD C. LUETH ON H. R. 2125 BEFORE SUBCOMMITTEE ON MILITARY OPERATIONS OF HOUSE COMMITTEE ON GOVERNMENT OPERATIONS

I am Dr. Harold C. Lueth, of Evanston, Ill., and the Chairman of the Committee on Civil Defense of the Council on National Defense of the American Medical Association. I appreciate the opportunity of appearing today on behalf of the American Medical Association to discuss the pending bill H. R. 2125.

I would like to take this opportunity to recognize the valuable work of this Subcommittee and to commend you for your objective review of our civil defense problems. Through your efforts, a wealth of valuable civil defense information is now compiled and documented.

As we understand H. R. 2125, its purpose is to reorganize civil defense functions and shift the basic responsibility from the states and their political subdivisions to the federal government as an integral part of national defense. Under the Federal Civil Defense Act of 1950, the Federal Civil Defense Administration recommends, advises, and offers guidance to the states. Under H. R. 2125, this responsibility would be reversed so that the states would have a supporting role in the preparation and execution of a national plan of civil defense for the United States.

The Association feels that sufficient emphasis has not been given to the health and medical aspects of civil defense. In June, 1954, the House of Delegates adopted the following resolution:

WHEREAS, The medical and health activities of the Federal Civil Defense Administration are one of the most, if not the most important function of the Agency, and

WHEREAS, The proper operations of the division of the Federal Civil Defense Administration, charged with responsibilities in the health field, is dependent upon sufficient authority and status within the Agency, and

WHEREAS, The need for complete and sound medical planning has become increasingly urgent and important with the recent developments in atomic and hydrogen weapons and the deterioration of the international situation, and

WHEREAS, During the past year there has been a gradual "down-grading" in the authority, responsibility, and organizational status of the Health Division of the Federal Civil Defense Administration; therefore be it

Resolved, That the American Medical Association request the Administrator of the Federal Civil Defense Administration to reexamine the position of the Health Division and that he be requested further to elevate that division to the status commensurate with its obligations and responsibilities.

In June, 1955, the House of Delegates reaffirmed this position. To our knowledge, the Health Office of the F. C. D. A. still does not have sufficient organizational stature and the position required to contribute effectively to the health and medical aspects of civil defense.

In June, 1956, the House of Delegates of the American Medical Association considered a resolution calling for the establishment of a Department of Civil Defense within the Department of Defense. It did not adopt the resolution, but did vote in favor of the broad objective of strengthening the federal civil defense program. The method of accomplishing this objective was thought to be a matter for determination by the Congress with the advice and assistance of the President and the State Governments.

Leaving aside the question of methods of organization of Civil Defense, the House of Delegates of the American Medical Association has expressed the conviction that the association should concentrate its interest and efforts in the medical aspects of the civil defense program. The medical profession naturally views civil defense from the standpoint of the medical and health care of the civilian population under disaster conditions. Our citizens are our most indispensable resource—without them, property and production are meaningless. If this nation is to survive nuclear attack, the population will have to be given adequate medical care and health protection. Only with such care and protection can our vital resources and essential production be reestablished and maintained.

The American Medical Association is primarily concerned with problems in this category, such as emergency medical and health service; the training of professional personnel for the management and care of mass casualties; the provision of adequate medical supplies, equipment, and facilities; the stockpiling of blood derivatives, plasma expanders, vaccines and antitoxins, burn dressings, drugs, and other medical supplies; and the sanitation provisions and other control measures to cope with communicable diseases and other public health hazards.

As early as June, 1952, the Association supported the stockpiling of critical and necessary medical supplies by the Federal Civil Defense Administration. The Association has repeatedly made strong recommendations to the Bureau of the Budget and to the Appropriations Committees of both Houses of Congress for increased appropriations for medical-health supplies for civil defense. In June, 1955, the Association endorsed the use of F. C. D. A. 200-bed emergency civil defense hospitals as an essential means of augmenting medical facilities during and after an enemy attack. On numerous occasions, our House of Delegates has urged individual physicians and constituent medical societies to participate in civil defense programs and to develop practical programs for carrying out their medical civil defense responsibilities. Medical civil defense is one of the two major areas of responsibility of the Association's permanent Council on National Defense.

To us, it seems appropriate and justified to suggest certain changes in H. R. 2125 so that the medical and health requirements of the civil defense program will be emphasized. They should be given greater stature and prestige, and we ask that this matter receive further consideration.

Specifically, in Title I, Section 109 of the bill, we recommend that the civil defense research projects and programs be spelled out in definite terms and that there be included such matters as radiation, sanitation, biological and chemical hazards, and other medical and health problems which may exist in a period of a national emergency. We further propose that provision be made for the inclusion of a physician on the Scientific Advisory Board.

With respect to Title I, Section 110, the Civil Defense Advisory Council, it is suggested that this Council be increased by three members representing the medical field. These three members would represent the medical profession, hospitals, and public health and sanitation.

We suggest in Title II, Section 201, that the medical and health aspects be established as a separately numbered item rather than being included in item (7). This subsection would read: "( ) health and medical requirements including the long-term medical care of the surviving non-casualty population."

Finally, in Title II, Section 202, it is suggested that a specific item be included under this section such as "( ) provide for adequate health and medical preparedness measures, including the procurement, stockpiling, and storage of sufficient medical supplies, equipment, and facilities, and the creation of a program for research and training for all types of medical personnel in the management and care of mass casualties."

In summary and to make it perfectly clear, the Association does believe that a strong civil defense requires positive action by the federal government with emphasis on increased federal leadership and direction. We believe that civil defense is an integral part of national defense and that the federal government has a direct responsibility whether it is administered jointly with the states or with the states in a supporting role.

QUARTERLY CUMULATIVE INDEX MEDICUS

Volume 56 of the Quarterly Cumulative Index Medicus, covering literature for the last half of 1954, has been mailed to subscribers and is now available for purchase from the Order Department of the American Medical Association. Preparation of volume 57 (January-June, 1955) is under way, and this issue will be in print later this year.

TWELFTH NATIONAL CONFERENCE ON RURAL HEALTH

Today's rural medical problems are closely allied to today's rural economic problems, participants agreed at the 12th National Conference on Rural Health in Louisville, Ky., on March 7-9.

The conference, sponsored by the A. M. A.'s Council on Rural Health, was attended by almost 1,000 persons. A highlight of the meeting was the banquet session, addressed by Dr. Leroy E. Burney, surgeon general of the U. S. Public Health Service.

Progress Since Founding of Council

Dr. Burney said that health progress since the Council was formed 11 years ago had been "dynamic," despite difficulties in some areas that are especially resistant to solution. Among the important improvements he listed was the growth of voluntary health insurance in the nation as a whole.

In 1946, 20 million Americans had insurance. By mid-1956, 110 million were covered, of whom 58 million also had medical-surgical coverage. "The growth of insurance coverage in rural areas has been less rapid than elsewhere, since group enrollment is difficult where there are no common employers of relatively large groups," he said. "According to a 1953 nationwide survey, however, an estimated 45 per cent of the families living on farms had some form of health insurance protection."

By 1956, he said, the following other major changes were among those that had been made:

—More than 1,000 entirely new general hospitals had been built with federal aid, nearly 80% of which were located in communities serving rural areas. More than half were in communities previously without a hospital. Many other small communities built new general hospitals without any federal aid.

—545 new health centers had been built in 33 states and 3 territories, to be used as delivery points for services of local health departments. Georgia alone had built 90, North Carolina 74, and South Carolina 69.

—More than 20 projects had been approved for expanding diagnostic and treatment centers, rehabilitation facilities, nursing homes, and chronic disease hospitals.

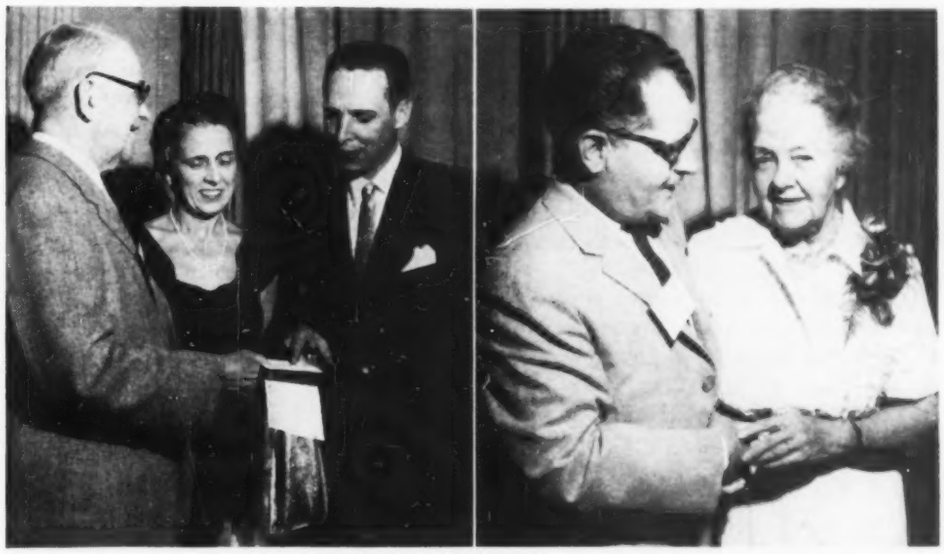


Fig. 1.—The American Medical Association held its 12th National Conference on Rural Health in Louisville, Ky., March 7-9. Featured on the program at the banquet were *(left)* Dr. F. S. Crockett, Lafayette, Ind., Vice-president of the A. M. A.; Mrs. Robert Flanders, Manchester, N. H., President of the Woman's Auxiliary to the A. M. A.; and Dr. L. E. Burney, Washington, D. C., surgeon general of the U. S. Public Health Service. *Right*, Dr. Wyatt Norvell, New Castle, Ky., president, Kentucky State Rural Health Council, bestowed a Kentucky colonelcy in behalf of Governor A. B. Chandler on Mrs. Charles W. Sewell, Otterbein, Ind., former administrative director of the American Farm Bureau Women's Committee. Mrs. Sewell is credited with originating the idea of a rural health conference.

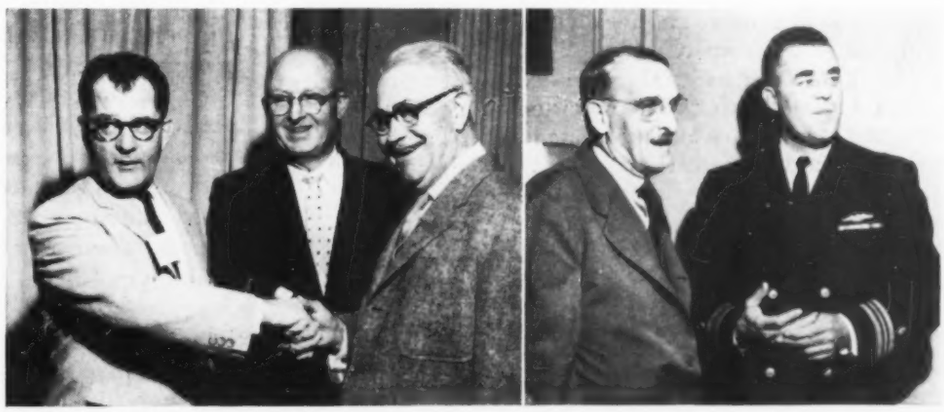


Fig. 2.—Presentations were also made at the National Rural Health Conference *(left)* to Aubrey Gates, Executive Director of the A. M. A. Council on Rural Health, and Dr. Crockett. Dr. Norvell gave the two rural health leaders keys to "My Old Kentucky Home." Talking over their participation in the final session of the conference are *(right)* Dr. Henry B. Mulholland, Charlottesville, Va., who spoke on problems of the aging, and Dr. George F. Bond, New London, Conn., session chairman.

—Local people had attracted new doctors by assuring them of assistance in building hospitals, by scholarships and loan funds under voluntary group sponsorship, and by some state government help.

—The opening of hundreds of small new hospitals had tapped an unexpected source of nurses: housewives living in communities who had retired from nursing but who returned to their profession when a new hospital opened close to home. Two out of five nurses employed in rural hospitals were previously housewives.

—Rural births in hospitals instead of at home had risen from 67% in 1946 to 88% in 1954.

—A number of projects in cooperative health care had been started by large medical centers and regional hospitals in both rural and urban communities.

Earlier in opening the conference, Dr. F. S. Crockett, Lafayette, Ind., Council Chairman and A. M. A. Vice-president, said that every rural community has within it the resources for good health if it is willing to use them. As producers of food products, farmers constantly have before them the benefits that they can give to their grain and livestock through using such measures as "careful selection, hygiene, nutrition and prevention."

The problem is to help people living in rural communities to learn how to use similar measures in protecting and improving their own health. The family doctor—and through him the county, state, and national medical organizations—can help in this educational process, he said.

Highlights

Other speakers on the program and some highlights of their talks were as follows:

Dr. Austin Smith, Editor of THE JOURNAL of the A. M. A., said that many recent medical "miracles" have brought problems with them. One of these is the danger of piecemeal legislation, which "whittles away piece by piece our rights and privileges." This and other difficulties emphasize three facts: 1. Medical care today is unique in its lifesaving and distress-relieving possibilities. 2. Medical care has become a complex part of our life. 3. Providing medical care is more than a one-man job.

Dr. Julius Michaelson, Foley, Ala., chairman of the state medical association's committee on medical service and public relations stated that delivering today's medicine taxes the knowledge, skill, integrity, and endurance of the doctor of today, but all his efforts are useless unless the patient comes to him. He commented, "We have prepared ourselves to deliver the goods . . . every one of you must establish a close relationship with a doctor you have chosen to be your family physician, the manager of all your medical affairs, someone in whom you can put your trust and confidence. This relationship will establish a foundation upon which complete understanding between physician and patient can be attained. This in itself will provide the answer to most of the medical needs of every person or family in this great nation of ours."

Dr. Edward L. Turner, Secretary of the A. M. A. Council on Medical Education and Hospitals, commented that the rapid accumulation of knowledge applicable to medicine today makes it necessary to continuously study and revise the curriculum, techniques, and methods utilized in medical education. Some of the current problems and challenges include the background preparation of the medical student, the increasing trend toward specialization, and the fundamental need of adequately preparing the undifferentiated physician for his future work as a general practitioner or specialist.

Dr. W. Wyan Washburn, Boiling Springs, N. C., stated that the doctor's little black bag contains a great deal more today than it did in the times of "superstition, witchcraft, charlatanism and old wives' tales." Among its contents are included relief of pain, better maternal care, longer life expectancy for the newborn, a good history and physical examination, laboratory tests, medicines, peace of mind, prevention, the science and the art of medicine, the doctor-patient relationship, community leadership, and finally "charity, faith and hope."

Dr. W. R. Alstadt, Little Rock, Ark., president-elect of the American Dental Association, reported that surveys show that people neglect dental care for three reasons: inaccessibility of dentists, cost, and fear. However, none of these excuses are valid, he said. Dental fees have gone up only 75% since 1939, compared to a 90% rise in the cost of living; about 60% of the population live less than 5 miles from a dentist, while only 3% live more than 30 miles from one; and today's dentists are equipped to give excellent care with a minimum of pain.

A proper diet with avoidance of refined sugars is essential to dental protection. The profession urges parents to encourage their children to stave off between-meal hunger with milk, peanuts, popcorn, potato chips, corn chips, peanut butter, raisins, cheese, and fruit of all kinds. Teeth should be brushed thoroughly within 10 minutes after each meal.

Dr. Otis L. Anderson, Washington, D. C., assistant surgeon general of the U. S. Public Health Service, commented that migrant agricultural workers need to be viewed as part of the general population and not apart from it. Their health needs should be met within the framework of existing services for citizens of the communities in which they work. Efforts to provide better housing, to encourage migrant children to attend school, and to arrange for health services in economically feasible ways will pay off in terms of greater assurance of dependable workers when needed, and reduced chances of disease arising and spreading among migrants and permanent residents. When migrant influx is at a peak, supplemental health services may be needed, such as clinics set up near migrant camps.

Dr. Vergil N. Slee, Ann Arbor, Mich., director of the Commission on Professional and Hospital Activities, Inc., related that among suggested solutions for improved health among migrant workers is the "community migrant services association," with a governing body composed of growers, migrants, citizens, physicians, and hospital representatives. Such a group would work through the year for better housing and education, in breaking down language barriers and working out ways to supply religious and recreational facilities, for the establishment of nursery schools, and in solving medical problems. It might also provide funds and work out methods of enrollment in voluntary insurance plans.

J. Carroll Bottum, Lafayette, Ind., agricultural economist at Purdue University, said that voluntary health insurance can and should be a "built-in cost" of farm operation, like rural electrification. Farmers' incomes are subject to wide fluctuation, and, during certain periods, paying for their health costs is very difficult—such as at the present time. Agriculture stands to gain if it can increase the number of people in agriculture who carry health insurance. "Both technical and economic advantages," he continued, "are making it possible to have better health conditions in rural areas. Our problem is to marshal the human forces of agriculture and the nation in the health field in such a way that we fully capitalize on the advances in technology and economic progress."

Dr. Madison B. Brown, director of administrative services of the American Hospital Association, stated that the A. H. A.'s efforts in national legislation have been to provide assistance where local or state tax funds do not provide help sufficiently to assure high quality; this legislation is national but without national control. "To fail in the provision of health insurance by voluntary prepayment, or to fail in support of your local health services is to veto the growth and development of the voluntary traditions of our life," he commented.

Dr. Carll S. Mundy, Toledo, Ohio, Vice-chairman of the Council, in a speech read for him in his absence, said that a dangerous trend in health insurance and one reason for its rising cost is the public demand for too many benefits that do not belong in insurance policies: "Many of these items are small and insignificant . . . they increase the cost out of all proportion to the benefit gained." These items violate a basic law of insurance: the event covered by insurance, while it must be "predictable" for large groups or areas, must be "unpredictable for the individual." The public should learn to budget for the expected and regular expenses as they would for a new car.

Louis A. Wolfanger, Ph.D., professor of land use, Michigan State University, suggested that our flattest and most fertile farm lands are being put to nonfarm uses while low-grade farm land that could be used for nonfarm uses is being bypassed. "We are subdividing and urbanizing ourselves right out of good food-producing lands," he declared. The loss of valuable farm lands in this way, through the "Topsy-like growth" of communities, could be prevented through adequate planning of the rural governments in areas in which expansion is taking place.

Dr. H. B. Mulholland, Charlottesville, Va., and Chairman of the A. M. A. Committee on Aging, said that problems of the aging population are social, financial, and physiological as well as medical. Forced retirement at age 65 is a tradition that should be eliminated by education of the public, labor groups, and industry. The farmer, who does not have this particular problem, is faced with medical problems such as cardiovascular disease, mental illness, and accidents. The jobs to be done in this field include research into the causes of these problems, and their prevention.

FEDERAL MEDICAL LEGISLATION

First Session, 85th Congress

Presidential Control of Medicinal Substances

Representative Multer (D., N. Y.), in H. R. 825, would provide "That (a) whenever the President finds that any particular medicinal substance is the only one, or substantially the only one, which is effective for the prevention or treatment of any disease the prevalence and seriousness of which creates, in his judgment, an emergent national health problem, he may issue a proclamation setting forth such finding and . . . he may by order or by regulation allocate such substance and regulate its use and distribution in such manner, upon such conditions, including the fixing of price ceilings, and to such extent as he may deem necessary or appropriate for the protection and preservation of the health of the American people."

The author introduced an identical bill last Congress at the height of the poliomyelitis vaccine controversy. This bill was referred to the Committee on Banking and Currency.

Veterans' Legislation

Pulmonary Tuberculosis Deemed Permanent and Total Disability.—Representatives Rogers (R., Mass.), in H. R. 917, Shuford (D., N. C.), in H. R. 1264, Fino (R., N. Y.), in H. R. 2431, and Christopher (D., Mo.), in H. R. 3821, have introduced identical bills that would provide that "An individual (veteran) will be deemed to be permanently and totally disabled for the purposes of this part during all periods of hospitalization for active pulmonary tuberculosis." At present, pension payments are usually started only after attempts of rehabilitation have been made for several months. All these bills were referred to the Committee on Veterans' Affairs.

Presumption of Service Connection for Multiple Sclerosis, Psychoses, Malignant Tumors, and Arthritis.—Representative Rogers (R., Mass.), in H. R. 924, would increase to three years the service-connection presumption for multiple sclerosis, psychoses, and malignant tumors. This was referred to the Committee on Veterans' Affairs.

In H. R. 929, Representative Rogers (R., Mass.) would, in addition, make a technical correction in the regulations to clarify the service presumption for active pulmonary tuberculosis and all other types of active tuberculosis developing a 10% degree of disability or more within three years. This also was referred to the Committee on Veterans' Affairs.

Representative Henderson (R., Ohio), in H. R. 1143, would increase service presumption for arthritis, psychoses, and multiple sclerosis to three years. This was referred to the Committee on Veterans' Affairs.

Hospital and Outpatient Care for Retired Veterans of the Spanish-American War, Boxer Rebellion, and the Philippine Insurrection.—Representative Teague (D., Texas), by request, has introduced H. R. 951, a measure that provides that "The benefits authorized by this proviso shall be extended to veterans who were retired from active service in the same manner as is now authorized for veterans who were discharged from such service." At the present time a discharged veteran from

the Spanish-American War, Boxer Rebellion, or the Philippine Insurrection may receive outpatient or hospital care for both service-connected and non-service-connected disabilities. Members of the military forces, who have been retired, receive no hospital or outpatient benefits unless they waive their retirement payment and establish a claim for compensation. Mr. Teague's proposal would eliminate this requirement. This measure was referred to the Veterans' Affairs Committee.

Hospitalization Under the OASI Fund

Representative Cellar (D., N. Y.), in H. R. 1092, would pay the cost of hospitalization for all persons receiving benefits under OASI. Sixty days' hospitalization expenses would be provided annually, except for tuberculosis, mental diseases, or institutional, domiciliary, or nursing-type care, which would not be provided. Surgery or medical care expenses also would not be provided, except for such services as are generally furnished by hospitals. This bill was referred to the Ways and Means Committee.

Aging

Select Committee on Problems of the Aging.—Representatives Yates (D., Ill.), in H. Res. 61, Powell (D., N. Y.), in H. Res. 130, and King (D., Calif.), in H. Res. 154, have introduced identical measures that would establish a select House committee on problems of the aging. The committee would be "authorized and directed to—

"(a) investigate the status of the older age group within our population to determine what the basic problems are in the fields of employment, health, education, and community services in connection with the utilization of our older population group, what the Federal Government's responsibilities are or should be with respect to the solution of any of these problems, and what order of priority should be given these problems in planning methods for obtaining their solution.

"(b) determine how the Federal Government can best cooperate with local communities and private industry in their efforts to provide better health and medical care, employment opportunities, living arrangements, recreation and education facilities geared to the needs of such older-age groups" and

". . . shall report to the House . . . as soon as practicable during the present Congress the results of its investigations and studies, together with such recommendations as it deems advisable." These measures were referred to the Rules Committee.

Representative Kelley (D., Pa.), in H. Res. 78, would authorize and direct the House Committee on Education and Labor to make a similar study and report. This also was referred to the Committee on Rules.

U. S. Commission on the Aging and Aged.—Senator Potter (R., Mich.), in S. 258, would establish a "U. S. Commission on the Aging and Aged" of 10 members composed as follows:

"(1) Six appointed by the President of the United States, three from the executive branch of the Government and three from private life; (2) Two appointed by the President of the Senate from the Senate; and (3) Two appointed by the Speaker of the House of Representatives from the House of Representatives."

The commission would make a study of problems of the aging and report not later than May 1, 1958. This measure was referred to the Labor and Public Welfare Committee.

Grants for Studies and Projects for the Aged.—Representatives King (D., Calif.), in H. R. 4398, Reuss (D., Wis.), in H. R. 3408, Thompson (D., N. J.), in H. R. 3415, and Addonizio (D., N. J.), in H. R. 4486, and Senator Magnuson (D., Wash.), in S. 1117, have introduced identical measures that would propose to authorize 2 million dollars to make payments to states that would develop plans for the benefit of the older population. These measures are identical to H. R. 383, by Representative Rhodes (D., Pa.), previously reported. Following the development of a state plan, grants would be given to the states for carrying out the projects developed. An advisory committee on aging would be established. The House measures were referred to the Committee on Education and Labor. The Senate measure was referred to the Committee on Labor and Public Welfare.

Benefits for Wounded or Gassed Veterans

Representative McDonough (R., Calif.), in H. R. 330, would amend the Veterans' Benefit Laws by granting an automatic 10% disability rating to any veteran who, during active service in wartime, was gassed or wounded. An additional 10% rating would be given in addition if he is disabled as a result of any other compensable disease or injury, so long as the total rating does not exceed 100%. This proposal would place all gassed or wounded veterans in the status of veterans with service-connected disabilities, making them eligible for hospitalization regardless of the availability of space or ability to pay and making them eligible also for outpatient care. This proposal was referred to the Committee on Veterans' Affairs.

Mosquito Research and Control Grants

Representatives Rivers (D., S. C.), in H. R. 1227, Willis (D., La.), in H. R. 1271, Rogers (D., Fla.), in H. R. 3865, Magnuson (D., Wash.), in H. R. 4211, Dixon (R., Utah), in H. R. 4646, Metcalf (D., Mont.), in H. R. 4937, and Sikes (D., Fla.), in H. R. 4833, and Senator Holland (D., Fla.), in S. 704, have introduced similar bills that would authorize appropriations for aiding research to devise methods for the extermination and control of mosquitoes and providing federal technical facilities and services to aid states in the formulation and execution of state and local mosquito research and control programs. The program would be administered by the surgeon general of the Public Health Service. Grants could be given to the state and local governments, other public agencies, and private agencies and institutions in the extermination of mosquitoes and in collecting and disseminating information related thereto. The House bills were referred to the Interstate and Foreign Commerce Committee and the Senate bill to the Labor and Public Welfare Committee.

Cancer Research

Representative Rooney (D., N. Y.), in H. R. 1235, and Senator Neely (D., W. Va.), in S. 1157, would "authorize and request the President to undertake to

mobilize at some convenient place in the United States an adequate number of the world's outstanding experts, and coordinate and utilize their services in a supreme endeavor to discover means of curing and preventing cancer." The measures would authorize the appropriation of 100 million dollars to carry out the provisions of this act.

Representative Chiperfield (R., Ill.), in H. R. 4644, has introduced a similar bill, except that the amount of funds is not specified. The Senate bill was referred to the Committee on Labor and Public Welfare. The House bills were referred to the Foreign Affairs Committee.

Representative Staggers (D., W. Va.), in H. R. 4139, introduced a similar bill, except that the experts would be limited to those residing in the United States. This bill was referred to the Committee on Interstate and Foreign Commerce.

Temporary National Advisory Committee for the Blind

Representative Matthews (D., Fla.), in H. R. 1955, proposes to establish a temporary National Advisory Committee for the Blind to "investigate and study the entire field of existing federal, state, and local activities related to the granting of services to the blind, including the history and development of such activity. The committee shall report to the President and to the Congress, within 24 months after passage of this act, the results of such investigation and study, together with recommendations (1) for accomplishing greater coordination of and more effective results from such activities, (2) for the attainment of maximum benefits for the blind, and (3) with respect to such other matters as the committee may deem appropriate.

". . . The Committee shall be composed of nine members, who shall be conversant with work for the blind, to be appointed by the President as follows: (1) One individual from the executive branch of the Federal Government; (2) One individual from the Senate of the United States; (3) One individual from the House of Representatives of the United States; (4) One individual from among officers and employees of the State governments; (5) One individual from a national association of professional workers with the blind; (6) One individual from a national organization of the blind; (7) One individual from a national research organization for the blind; (8) One individual from the field of education of the blind; and (9) One individual from the public at large. (c) Any vacancy in the Committee shall not affect its powers, but shall be filled in the same manner in which the original appointment was made."

It is not specified that any member shall be a physician or one from any branch of the health professions. The measure was referred to the Committee on Education and Labor.

U. S. Armed Services Medical Academy

Representative Bennett (D., Fla.), in H. R. 1055, has introduced a bill identical with his bill introduced in the 84th Congress, which would establish a United States Armed Forces Medical Academy, similar to the Army, Navy, and Air Forces military academies. This bill was referred to the Armed Services Committee.

BROCHURE ON THE MEDICAL WITNESS

"The Medical Witness" is a new brochure offering nine points to guide the physician in the presentation of medical testimony. Physicians may obtain free copies for their libraries by writing to the Director of Professional Relations, the Wm. S. Merrell Company, Cincinnati 15. Prepared in cooperation with the A. M. A. Law Department, the pamphlet offers a series of precepts by C. Joseph Stetler, Director of the Department. Included in the brochure is a bibliography listing 36 sources, some of which the physician might want to explore before being called as a medical witness.

TRIP TO FAR EAST

Capt. C. W. Stelle, M. C., U. S. Navy, on the staff of the commander of the naval forces in the Far East, force medical office, wrote to Dr. George Lull, Secretary of the A. M. A., stating, "I had the esteemed

Making an inspection of U. S. Naval Hospital, Japan, are *(left to right)* Captain Schwartz; Dwight H. Murray, President of the A. M. A.; Captain Stelle; Dr. Bartemeier; and Rear Admiral Hays.

privilege of arranging for and escorting Dr. Murray and Dr. Bartemeier on their trip through Japan. They were accompanied from Pearl Harbor by Rear Admiral T. G. Hays, MC, USN, Staff Medical Officer for Commander in Chief, Pacific Fleet. I left the party in Okinawa. They were well and in excellent spirits. I am enclosing a picture taken in the lobby of the U. S. Naval Hospital, Yokosuka . . . The visit to Tokyo with the Japanese Medical Association was very interesting."

JOURNAL INDEX

The index to volume 163 of THE JOURNAL will appear in the May 11 issue. Those who wish extra copies of the index may receive them, without charge, on request to the Order Department, American Medical Association, 535 N. Dearborn St., Chicago 10.

MEDICAL NEWS

CALIFORNIA

Clifford Sweet Lectureship.—Dr. Sydney S. Gellis, chairman, department of pediatrics, Boston University School of Medicine, will deliver the sixth annual Clifford Sweet Lectures at Children's Hospital of the East Bay, Oakland, June 7-8. His principal lecture, "Iatrogenic Diseases," will be given at 6 p. m. in connection with the annual opening night banquet. Information may be obtained from Children's Hospital of the East Bay, 5105 Dover Street, Oakland 9, Calif. (OLympic 2-1143).

Personal.—Dr. Robert S. Westphal, Santa Rosa, past-president of the Sonoma County Medical Society, recently returned from Egypt, where he served as regional director, World Health Organization, for the Eastern Mediterranean countries. Dr. Westphal has been named health officer of Stanislaus County.—Hadley Kirkman, Ph.D., professor of anatomy, Stanford University, won a senior postdoctoral fellowship awarded recently by the National Science Foundation, Washington, D. C. Dr. Kirkman will spend the 1957-1958 academic year at the Chester Beatty Research Institute of London's Royal Cancer Hospital.

COLORADO

Personal.—Dr. Glen M. Clark, director, Arthritis Research Unit, University of Colorado College of Medicine, Boulder, has joined the staff of the University of Tennessee College of Medicine, Memphis, as assistant professor of medicine. Dr. Clark served for two years as fellow of the American Rheumatism Association at Johns Hopkins University School of Medicine, Baltimore.

Dr. Darley Assumes New Post.—Dr. Ward Darley, who recently resigned as the seventh president of the University of Colorado School of Medicine, Denver, has been appointed executive director of the Association of American Medical Colleges, which has its office in Evanston, Ill. The Colorado-born-and-educated physician and administrator returned to Evanston in time for the dedication of the association's new building, 2530 Ridge Ave., Evanston. Dr. Dean F. Smiley, who was formerly on the staff of the A. M. A. Council on Medical Education and Hospitals, will continue as secretary of the Association.

CONNECTICUT

Announce Ford Grant.—A grant of $3,600,000 to the Yale University School of Medicine, New Haven, from the Ford Foundation has been announced as part of the foundation's program to strengthen instruction in the nation's private medical schools. The foundation is making grants to 45 private medical schools, ranging from $600,000 to $3,600,000, and six medical schools, Yale, Harvard, Johns Hopkins, University of Chicago, Columbia, and Cornell, will receive the top award.

Annual State Society Meeting.—The 165th annual meeting of the Connecticut State Medical Society will be held at the High School in East Hartford, April 30-May 2. The program includes the following topics and speakers:

Pediatric Problems in Underdeveloped Countries, Charles A. Janeway, chairman, department of pediatrics, Harvard Medical School, Boston.

The Changing Picture of Pulmonary Surgery, Julian Johnson, professor of surgery, University of Pennsylvania School of Medicine and Graduate School of Medicine, Philadelphia.

Vascular Emergencies: Their Recognition and Treatment, Harris B. Shumacker Jr., chairman of the department of surgery, Indiana University Medical Center, Indianapolis.

Common Errors in the Diagnosis of Acute Abdomen, Samuel J. Stabins, associate professor of surgery, University of Rochester School of Medicine and Dentistry, Rochester, N. Y.

Fluothane, John Abajian Jr.; professor of anesthesiology, University of Vermont College of Medicine, Burlington.

Panel discussions on medical care insurance, corticoids in gastrointestinal diseases, and pulmonary emphysema and related topics are scheduled. An art exhibit by the Connecticut Physicians' Art Association and technical exhibits are planned. A round-table discussion of cytologic and histologic methods for diagnosis of precancerous states and early carcinoma of the uterus will be moderated by Dr. Leon Motyloff, pathologist, Woman's Hospital, New York, and Dr. Ralph E. Kendall, pathologist, Hartford Hospital, Hartford. The annual dinner will be at the Hartford Club 7 p. m., May 1. For information write James G. Burch, Public Relations Director, Connecticut State Medical Society, 160 St. Ronan St., New Haven 11.

GEORGIA

Health Test Program in Atlanta.—According to the Industrial Health Council of Greater Atlanta, Inc., a majority of employees in Atlanta business and industry found with indication of certain diseases and health problems by the Industrial Health Council apparently are not aware that such problems exist. Of 10,079 records of persons who went through the council's Healthmobile during the first year of the Healthmobile's operation, 1956, over one-half of the employees who received its eight health tests had indication of one or more problems. These employees are equally divided between white-collar personnel and industrial workers in 130 companies. In 1,003 positive findings involving the four collective problems of high blood pressure, abnormal blood sugar (diabetes), heavy urine albumin, and low hemoglobin (anemia), 76% said they had never had any one of the four problems concerned. The council emphasizes that its findings are not an actual diagnosis, yet its tests follow accepted medical standards and the apparent net effect of these results is that 900 out of the 1,000 persons concerned were in need of seeing a physician for an evaluation of possible physical defects they didn't know about.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

ILLINOIS

Anesthesiologists Meeting in Chicago.—The annual meeting of the Illinois Society of Anesthesiologists will be held May 19 at the Hotel Sherman, Chicago. A symposium on hypnosis in the morning session will include papers by Dr. Vincent J. Vaughn, Ottumwa, Iowa, on "Hypnosis from the Standpoint of the Anesthesiologist," and Dr. Valentino D. B. Mazzia, instructor in surgery, (anesthesiology) Cornell University Medical School, New York City, on "Anesthetic Deaths." A round-table luncheon will precede the afternoon program at which Dr. Robert A. Hingson, professor of anesthesia, Western Reserve University School of Medicine, Cleveland, will present "The Present Status of Conduction Anesthesia in Surgery, Obstetrics, and Therapeutics." For information write Dr. Huberta M. Livingstone, Chairman, Program Committee, 5805 Dorchester Ave., Chicago 37.

Chicago

D. J. Davis Memorial Lectures.—The annual D. J. Davis Memorial Lecture on Medical History will be given at 1:00 p. m., May 15, at the University of Illinois College of Medicine, 1853 W. Polk St., by Dr. Elmer Belt, Los Angeles, on Leonardo da Vinci's Medical Observations.

Cardiovascular Conference.—The cardiovascular committee of the Cook County Hospital announces a cardiac conference to be held April 30 at the Children's Amphitheater, 700 S. Wood St. Dr. Richard Langendorf, attending physician, department of medicine, and research associate, cardiovascular department, Michael Reese Hospital, will speak on "Differential Diagnosis of Paroxysmal Tachycardias" at 11 a. m. Physicians are invited.

Dr. Dack to Receive Award.—Dr. Gail M. Dack, director, Food Research Institute and professor of bacteriology, University of Chicago, the School of Medicine, will receive the 10th Pasteur Award May 11 at a banquet in the Edgewater Beach Hotel, after which he will deliver the Pasteur Award Lecture before the Society of Illinois Bacteriologists. The award is presented annually by the society to an outstanding bacteriologist in the Midwest. Dr. Dack was honored for his contributions to food microbiology, especially in regards to the etiology of bacterial food poisonings.

Fund for Research in Rheumatic Fever.—A $600,000 fund for research into the cure and treatment of rheumatic fever and related diseases has been established at the Northwestern University Medical School by Mr. Samuel Sackett, of Evanston. His gift will be used to expand a research and treatment program initiated in 1954 by a grant from the Samuel Sackett Foundation. The program is being conducted at the Northwestern Medical Center under the direction of Dr. Gene H. Stollerman, formerly medical director of Irvington House, Irvington-on-Hudson, N. Y., who joined the Northwestern faculty in 1955.

INDIANA

Personal.—Dr. Clyde G. Culbertson, Indianapolis, director of Eli Lilly and Company's biological research division, has received the first Distinguished Citizen Award of the American Legion's Eleventh District. The award is to be presented annually to a resident of Marion County who has performed an outstanding service to his community, state, or nation. Dr. Culbertson has served as a member of several committees of the Indiana State Medical Association and as a member of the editorial board of the association's journal.

Seminar on Liver Diseases.—The Indiana Association of Pathologists will hold its ninth annual seminar May 19 at the Veterans Administration Hospital, 1481 W. 10th St., Indianapolis. The subject, "Diseases of the Liver," will be presented by Dr. Edward A. Gall, Mary Emory professor of pathology, University of Cincinnati College of Medicine. Slide sets and protocols will be available for pathologists who are not members of the association and will be issued to those who apply in in order of their applications. A fee of $5 will be charged and should be sent with the request to Dr. Lester H. Hoyt, Secretary, Indiana Association of Pathologists, Methodist Hospital, Indianapolis 7.

KANSAS

Annual Meeting of State Society.—The annual meeting of the Kansas Medical Society will be held at the Broadview Hotel, Wichita, May 5-9. A T.V. closed-circuit program, "The Physician and Emotional Disturbance," will be presented at the Allis Hotel with Dr. D. Bernard Foster, Topeka, presiding. A cardiovascular panel discussion at the Arcadia Theatre will be moderated by Dr. Earl L. Mills, Wichita, and a gastrointestinal panel will be moderated by Dr. Mahlon H. Delp, Kansas City, Mo. Two movies, "Embryology and Pathology of the Intestinal Tract" and "The Medical Witness" are scheduled. A skeet shoot and golf turnament and the general practice banquet will be held May 6. The president's banquet and dance will be May 8, 7 p. m.

MICHIGAN

Conference on Hypertension.—The University of Michigan Regional Conference on Hypertension will take place in Ann Arbor, June 7-8 in recognition of the 25th anniversary of the first production of experimental renal hypertension by Dr. Harry Goldblatt, Cleveland, Ohio. Reports will be presented on the basic mechanisms of renal hypertension, including adrenal, neurogenic, and renoprival aspects. Dr. Eduardo Braun Menéndez, Argentina, will be among the participants. For reservations write Dr. John M. Sheldon, Director, Department of Postgraduate Medicine, University of Michigan Medical School, Ann Arbor, Mich.

NEBRASKA

Personal.—Dr. Benjamin B. Wells, director of the department of medicine, Creighton University School of Medicine, Omaha, has been appointed to the newly established position of director of clinical investigation at the Lynn Clinic, Detroit.

Interstate Training Program.—The Nebraska Psychiatric Institute, Omaha, has begun a pilot project to assist North Dakota, South Dakota, and western Iowa in the development of their training and research pro-

grams. Certain professional personnel will attend the institute for specialized training at the expense of the hospitals involved. A grant from the National Institute of Mental Health will help to initiate the project.

NEW YORK

Personal.—Dr. Joseph A. Mellow, Manhasset, was appointed chief of staff of the obstetric and gynecology service at Nassau Hospital, Mineola, as of Feb. 1.

Dr. McCann Honored.—Dr. William S. McCann, chairman of the department of medicine, University of Rochester School of Medicine and Dentistry, recently was named recipient of the 1957 Albert David Kaiser medal. The award, established in 1939 in honor of the late Dr. Albert D. Kaiser, former Rochester city health officer, is presented annually by the Rochester Academy of Medicine to academy fellows for distinguished service in medicine, public health, and community welfare. The award will be presented at the annual meeting of the academy, May 7.

New York City

Appoint Director of Surgery.—Mount Sinai Hospital of New York announces the appointment of Dr. Ivan D. Baronofsky as director of the department of surgery. Dr. Baronofsky in February completed a two-year tour of duty as chief, thoracic surgery service, U. S. Naval Hospital, San Diego, Calif. Formerly he was associate professor of surgery, University of Minnesota Medical School, Minneapolis; director, postgraduate surgery education, Ancker Hospital, St. Paul; and staff surgeon, University of Minnesota Hospital, Minneapolis.

OHIO

New Section on Industrial Medicine.—The Council of the Ohio State Medical Association has established a section on industrial medicine. Chairman of this new section is Dr. Rex H. Wilson, Akron, and the secretary is Dr. James P. Hughes, professor of preventive medicine, Ohio State University Medical Center, Columbus. The first meeting will be held during the state meeting on May 14, beginning at 9:30 a. m., in rooms 203 and 204, Veterans' Memorial Building, Columbus. The program includes the following:

Industrial Medicine: 1957, Leo J. Wade, medical director, Esso Standard Oil Company, New York City.
Opportunities and Training in Industrial Medicine, William F. Ashe Jr., chairman of the department of preventive medicine, Ohio State University College of Medicine, Columbus.
The Physician and the Smaller Plant (Panel Discussion), moderated by Rex H. Wilson, Akron.

All doctors interested in industrial medicine are invited.

PENNSYLVANIA

Mellon Institute to Cultivate Fundamental Research.—Plans recently adopted by the Mellon Institute, Pittsburgh, call for a major expansion of fundamental research in that institution. The research is contemplated in fields embracing physical chemistry, chemical physics, and inorganic, organic and analytical chemistry. A wide latitude of opportunity will be assured for creative research. Members of the research staff will be encouraged to direct their efforts toward significant objectives of their own choosing and to evolve their own problems and programs. For information write: Mellon Institute, 4400 Fifth Ave., Pittsburgh, 13.

Philadelphia

University News.—Beta Chapter of Alpha Omega Alpha, University of Pennsylvania School of Medicine, will present its annual honor lecture May 3 in the Medical Alumni Hall, Hospital of the University of Pennsylvania, at 4:15 p. m. Dr. George W. Thorn, Hersey Professor of the theory and practice of physic, Harvard Medical School, and physician-in-chief, Peter Bent Brigham Hospital, Boston, will lecture on "Aldosterone Studies in Man."——Temple University Medical Center, Philadelphia, has been awarded two United States Public Health Services grants for cancer studies. A $70,569 three-year study to determine levels of dosage in patients receiving radiation therapy is under the direction of Dr. Robert Robbins, director of the radiotherapy department. Dr. Charles Harris, associate in research pathology of the Fels Research Institute, received an $11,799 grant for an investigation of transferable leukemia in the rat.

SOUTH CAROLINA

State Medical Meeting.—The South Carolina Medical Association will hold its annual meeting April 30-May 2, at Myrtle Beach. The scientific program includes a panel discussion, on "Use and Abuse of Drugs in Emotional Illness," moderated by Dr. Eugene B. Ferris, Atlanta, Ga. A forum, "Gastrointestinal Hemorrhage," moderated by Dr. W. Emory Burnett, Philadelphia, and a clinico-pathologic conference directed by Dr. Eugene A. Stead Jr., Durham, N. C., are scheduled. Among the topics and speakers in the program are:

Psychiatric Problems Best Not Managed by a Psychiatrist, Joseph Hughes, Philadelphia.
Management of Breast Lesions, W. Emory Burnett, Philadelphia.
Newer Concepts and Approaches in the Etiology and Treatment of Cancer, R. Lee Clarke Jr., Houston, Texas.
Management of Breech Presentations, Frank E. Whitacre, Nashville, Tenn.

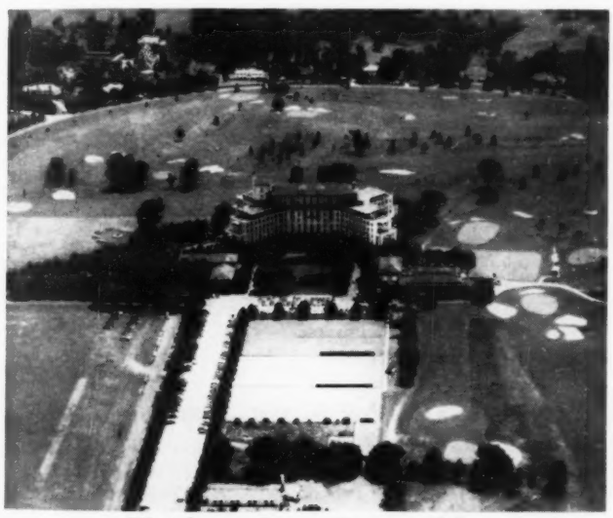
GENERAL

Virus Research.—The Rockefeller Foundation has appropriated $827,750 for 1957, bringing to $3,050,000 the amount given for the study of insect-borne tropical viruses which seasonally cause diseases in temperate-zone regions such as the regular appearance of encephalitis in Japan and the annual outbreak of Western Equine and St. Louis encephalitis in the irrigated valleys of California. The foundation's virus work is centered in laboratories in New York directed by Nobel laureate Dr. Max Theiler.

Nuclear Medicine Meeting in Houston.—The second annual meeting of the Southwestern Society of Nuclear Medicine will be held at the Texas Medical Center, Houston, May 4-5. Three panel discussions, "Radioisotopes vs. Chemotherapy in Certain Blood Dyscrasias and in Malignant Refusions," "Radiation Protection Codes, Federal, and State," and "Pros and Cons of Pulse Height Discrimination Technic in Clinical and Research Laboratories," will be moderated by Drs.

Gilbert H. Fletcher, J. R. Maxfield Jr., and Leonard Robbins, respectively. Practical demonstrations of radioisotope techniques will be given at three hospitals: University of Texas M. D. Anderson Hospital and Tumor Institute, Methodist Hospital, and Old Hermann Hospital. A discussion, "P-32 Eye Tumor Localization Technic," will be given by Dr. Herbert C. Allen Jr. and Vonda Sawyer, B.S. for information write Dr. Herbert C. Allen Jr., The Radioisotope Department, The Methodist Hospital, Houston 25, Texas.

Annual Medical Golf Tournament.—The American Medical Golfing Association will hold its 41st tournament June 3 at the Westchester County Country Club in Rye, N. Y., about 30 miles from Grand Central Station in New York City. This famous resort provides two 18-hole courses, a beach club on Long Island Sound, tennis courts, and a polo field. Eighteen-hole competition will determine championships and will be the basis for the awarding of prizes. The New York committee, with Dr. James T. Daniels Jr., chairman, has made excellent arrangements for a full day of golf and relaxation. The Westchester Country Club can be



Westchester County Country Club.

easily reached by train or bus to Rye or, if several golfers join together, by Carey Car Service (Cadillacs) or Rent-a-Car Service. Golfers wishing to have quarters closer to the club can secure reservations at nearby hotels in Rye, Harrison, New York, or Greenwich, Conn. Tournament play will start at 8:30 a. m., and players may tee off as late as 2:00 p. m. Players should present verification of their home club handicap, signed by their club secretary; otherwise handicap is set by the A. M. G. A. Handicap Committee. Buffet luncheon, banquet, prizes, and green fees are included in the cost of the day's activities. The banquet will be at 7:00 p. m., followed by awarding of prizes. All male members of the A. M. A. are eligible to participate in the tournament. Details may be secured from Bob Elwell, 3101 Collingwood Blvd., Toledo 10, Ohio.

ALASKA

Annual Territorial Meeting.—The annual Alaska Territorial Medical Association meeting, will be held in Ketchikan May 29-31. Dr. Michael R. Deddish, Memorial Center for Cancer and Allied Diseases, New York City, and Dr. Brewster S. Miller, director, professional education, American Cancer Society, have accepted invitations to attend. Dr. J. William Gibson, deputy medical director of the Territorial Department of Health in Juneau, is interested in having a physician brought up from the Northwest to demonstrate the proper taking of Papanicolau smears. All Alaska physicians are invited to present papers. Papers should be submitted to, and information may be obtained from, Dr. Louis A. Salazar, President, Alaska Territorial Medical Association, P. O. Box 359, Ketchikan, Alaska.

FOREIGN

International Congress of Neurological Sciences.—The first International Congress of Neurological Sciences will be held in Brussels, Belgium, July 21-28. Six organizations will participate by holding their meetings conjointly: sixth International Congress of Neurology; third International Congress of Neuropathology; fourth International Congress of Electro-encephalography and Clinical Neurophysiology; first International Congress of Neurological Surgery; fifth meeting of the International League Against Epilepsy; fifth Symposium Neuroradiologicum. Two joint meetings will be held with Dr. Raymond Garcin, of France, directing a discussion on "Extrapyramidal Pathology" at the first meeting and Sir Geoffrey Jefferson, of Great Britain, directing discussion on "States of Consciousness in Neurology" at the second. Special symposiums will be presented at the section meetings and a round-table conference on "Neurology at the Crossroads" will be directed by Sir Francis M. R. Walshe, of Great Britain. Speakers from France, Norway, Japan, Hungary, Argentina, Germany, Italy, the United States, and other countries are scheduled. A celebration at Louvain of the centenary of Arthur Van Gehuchten's birth will be held July 28. For information write Ludo Van Bogaert, Secretary-General, Institut Bunge, 59, rue Philippe Williot, Berchem-Antwerp, Belgium.

International Congress on Occupational Health.—The 12th International Congress on Occupational Health will be held in Helsinki, Finland, July 1-6. Membership is open to all physicians and members of allied professions. Official languages will be English, French, German, and Spanish. The program includes the following section subjects: general and social aspects of occupational health, occupational pathology and hygiene, industrial nursing, and occupational dermatology and ophthalmology. A round-table discussion, "Teamwork in Occupational Health," will be led by Dr. A. Bruusgaard (Norway). A symposium on human engineering and papers by two Russian authors, Prof. Z. B. Smeljansky and Prof. A. A. Letavet, are scheduled. Scientific and technical exhibits, films, and a social and ladies' program, including a Sibelius concert and reception given by the Government of Finland, are planned. For information write the organizing committee, International Congress on Occupational Health, Haartmaninkatu 1, Helsinki, Finland.

The Nicolo Castellino international prize will be awarded for the most outstanding investigation in the field of occupational health by a research worker. The entrant must be under 35 years old. Details can be obtained from The Nicolo Castellino Fund's Secretariate, % Instituto di Medicina del Lavoro, Piazza Miraglia, Naples, Italy.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 18-20. Sec., Dr. D. G. Gill, State Office Bldg., Montgomery 4.

ARKANSAS:* *Examination.* Little Rock, June 13-14. Sec., Dr. Joe Verser, Harrisburg.

CALIFORNIA: *Written Examination.* San Francisco, June 17-20; Los Angeles, Aug. 19-22; Sacramento, Oct. 21-24. *Oral Examination.* San Francisco, June 15; Los Angeles, August 17; San Francisco, Nov. 16. *Oral and Clinical for Foreign Graduates.* San Francisco, June 16; Los Angeles, Aug. 18; San Francisco, Nov. 17. Sec., Dr. Louis E. Jones, 1020 N St., Sacramento 14.

COLORADO:* *Examination.* Denver, June 11-12. Final date for filing application is May 13. Exec. Sec., Miss Beulah H. Hudgens, 715 Republic Bldg., Denver 2.

CONNECTICUT:* *Homeopathic. Examination.* Derby, June 11. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby. *Regular. Examination.* Hartford, July 9-11. Sec., Dr. Creighton Barker, 160 St. Ronan St., New Haven.

DELAWARE: *Examination.* Dover, July 9-11. *Endorsement.* Dover, July 18. Sec., Dr. Joseph S. McDaniel, 225 S. State St., Dover.

DISTRICT OF COLUMBIA:* *Examination.* Washington, May 13-14. Deputy Director, Mr. Paul Foley, 1740 Massachusetts Ave., N. W., Washington.

FLORIDA:* *Examination.* Miami, June 23-25. Sec., Dr. Homer L. Pearson, 901 N. W. 17th St., Miami.

GEORGIA: *Examination and Reciprocity.* Augusta and Atlanta, June. Sec., Mr. Cecil L. Clifton, 111 State Capitol, Atlanta 3.

IDAHO: *Examination and Reciprocity.* Boise, July 8-10. Exec. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

ILLINOIS: *Examination and Reciprocity.* Chicago, June 17-21. Supt. of Regis., Mr. Fredric B. Selcke, Capitol Bldg., Springfield.

INDIANA: *Examination.* Indianapolis, June 19-21. Exec. Sec., Miss Ruth V. Kirk, 538 K. of P. Bldg., Indianapolis.

KANSAS: *Examination and Endorsement.* Kansas City, June 5-6. Sec., Dr. Lyle F. Schmaus, 864 New Brotherhood Bldg., Kansas City.

KENTUCKY: *Examination.* Louisville, June 10-12. Sec., Dr. Russell E. Teague, 620 S. 6th St., Louisville.

LOUISIANA: *Examination and Reciprocity.* New Orleans, June 6-8. Sec., Dr. Edwin H. Lawson, 930 Hibernia Bank Bldg., New Orleans 12.

MAINE: *Examination and Reciprocity.* Augusta, July 9-11. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore, June 18-21. Sec., Dr. Lewis P. Gundry. 1215 Cathedral St., Baltimore 1.

MASSACHUSETTS: *Examination and Endorsement.* Boston, July 9-12. Sec., Dr. Robert C. Cochrane, 37 State House, Boston 33.

MICHIGAN:* *Examination.* Ann Arbor and Detroit, June. Sec., Dr. E. C. Swanson, 118 Stevens T. Mason Bldg., West Michigan Ave., Lansing 8.

MISSISSIPPI: *Examination.* Jackson, June 24-25. *Reciprocity.* Jackson, June 26. Asst. Sec., Dr. R. N. Whitfield, Old Capitol, Jackson.

MISSOURI: *Examination and Reciprocity.* Jefferson City, May 31-June 1. Exec. Sec., Mr. John A. Hailey, Box 4, State Capitol Bldg., Jefferson City.

NEBRASKA:* *Examination.* Omaha, June 17-19. Director, Mr. Husted K. Watson, Room 1009, State Capitol Bldg., Lincoln 9.

NEVADA:* *Examination and Reciprocity.* Reno, June 4. Sec., Dr. George H. Ross, 112 North Curry St., Carson City.

NEW HAMPSHIRE: *Examination and Reciprocity.* Concord, Sept. 11-13. Sec., Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, June 18-21. Sec., Dr. Patrick M. Corrigan, 28 West State St., Trenton.

NEW MEXICO:* *Examination and Reciprocity.* Santa Fe, May 20-21. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

NEW YORK: *Examination.* Albany, Buffalo, New York, Rochester and Syracuse, July 9-12. Sec., Dr. Stiles D. Ezell, 23 South Pearl St., Albany 7.

NORTH CAROLINA: *Endorsement.* Asheville, May 5, and Raleigh, June 18. *Written Examination.* Raleigh, June 17-20. Sec., Dr. Joseph J. Combs, Professional Bldg., Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, July 10-13. *Reciprocity.* Grand Forks, July 13. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination and Reciprocity.* Columbus, June 13-15. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA:* *Examination.* Oklahoma City, June 11-12. Sec., Dr. E. F. Lester, 813 Braniff Building, Oklahoma City.

OREGON:* *Examination.* Portland, April 19-20. Office of the Board, 609 Failing Bldg., Portland.

PENNSYLVANIA: *Examination.* Philadelphia and Pittsburgh, July 10-12. Acting Sec., Mrs. Marguerite G. Steiner, Box 911, Harrisburg.

RHODE ISLAND:* *Examination.* Providence, June 27-28. Admin. of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Endorsement.* Myrtle Beach, April 30. *Examination.* Columbia, June 25-26. Sec., Mr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA:* *Examination and Reciprocity.* Place not yet determined, July 16-17. Sec., Dr. C. B. McVay, Yankton Clinic, Yankton.

TEXAS:* *Examination and Reciprocity.* Fort Worth, June 24-26. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: *Examination.* Salt Lake City, July 11-13. Director, Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

VERMONT: *Examination and Reciprocity.* Burlington, June 20-22. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: *Reciprocity.* Richmond, June 12. *Examination.* Richmond, June 13-15. Office of the Board, 631 First St., S. W., Roanoke.

WASHINGTON:* *Examination.* Seattle, July 15-17. Sec., Department of Licenses, Mr. Edward C. Dohm, Olympia.

WEST VIRGINIA: *Examination.* Charleston, April 22. Sec., Dr. Newman H. Dyer, State Office Bldg. No. 3, Charleston 5.

WISCONSIN:* *Reciprocity.* Madison, April 26. *Examination.* Milwaukee, July 9-11. Sec., Dr. Thomas W. Tormay, Jr., 1140 State Office Bldg., Madison 2.

WYOMING: *Examination and Reciprocity.* Cheyenne, June 3. Sec., Dr. F. D. Yoder, State Office Bldg., Cheyenne.

ALASKA:* On application in Anchorage and Juneau. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

GUAM: *Subject to Call.* Act. Sec., Dr. S. F. Provencher, Agana.

HAWAII: *Examination.* Honolulu, July 8-9. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

VIRGIN ISLANDS: *Endorsement.* St. Thomas, June 12. Sec., Dr. Earle M. Rice, St. Thomas.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: *Examination and Reciprocity.* Tucson, June 18. Sec., Mr. Herbert D. Rhodes, University of Arizona, Tucson.

ARKANSAS: *Examination.* Little Rock, May 6-7. Sec., Mrs. S. C. Dellinger, Zoology Department, University of Arkansas, Little Rock.

COLORADO: *Examination and Reciprocity.* Denver, May 1-2 and Sept. 4-5. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 18.

CONNECTICUT: *Examination.* New Haven, June 8. Exec. Asst., Mrs. Regina G. Brown, 258 Bradley St., New Haven 10.

DISTRICT OF COLUMBIA: *Examination.* Washington, April 22-23. Deputy Director, Mr. Paul Foley, 1740 Massachusetts Ave. N. W., Washington 6.

FLORIDA: *Examination.* Miami, June 8. Sec., Mr. M. W. Emmel, Box 340, University of Florida, Gainesville.

MICHIGAN: *Examination.* Detroit and Ann Arbor, May 10-11. Sec., Mrs. Anne Baker, 116 Stevens T. Mason Bldg., W. Michigan Ave., Lansing 15.

MINNESOTA: *Examination.* Minneapolis, June 4-5. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: *Examination.* Omaha, May 7-8. Director, Mr. Husted K. Watson, Room 1009, State Capitol Bldg., Lincoln 9.

OKLAHOMA: *Examination.* Oklahoma City, April 19-20. Sec., Dr. E. F. Lester, 813 Braniff Bldg., Oklahoma City.

RHODE ISLAND: *Examination.* Providence, May 15. Admin. of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: *Examination.* Vermillion, June 7-8. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

WISCONSIN: *Examination.* Milwaukee, June 1, and Madison, Sept. 20. Sec., Mr. W. H. Barber, 621 Ransom St., Ripon.

*Basic Science Certificate required.

GOVERNMENT SERVICES

AIR FORCE

New Hospital at Chanute Air Force Base.—The new 200-bed U. S. Air Force Hospital at Chanute Air Force Base, Ill., was formally dedicated on March 2. The program featured addresses by Gen. Nathan F. Twining, U. S. A. F. chief of staff, and Major Gen. Dan C. Ogle, Air Force surgeon general.

The design of the hospital will permit expansion to add another 100 beds. Built at a cost of about 4 million dollars, it contains the most modern equipment, including air conditioning. Its professional staff includes many of the specialties not usually found at an Air Force hospital, such as orthopedic surgery, dermatology, and urology, and there is a flight surgeon's clinic. The building replaces a World War II cantonment-type hospital built in 1941. Col. Andres G. Oliver is in command of the new hospital.

New hospital at Chanute Air Force Base.

NAVY

Symposiums in the Far East by Civilian Consultants.—At the invitation of the surgeon general, Rear Adm. B. W. Hogan, a group of civilian specialists will visit naval medical installations in the Far East in April to observe the care and treatment available to the armed forces, to present symposiums on various subjects, and to make ward rounds and hold round-table discussions. Further objectives are to insure the continuance of high-caliber medical care rendered by the Navy. The group will visit Tripler Army General Hospital in Honolulu and the U. S. Naval Hospitals in Guam and Yokosuka, Japan. The faculty of the University of Tokyo Medical School has been invited to attend the symposiums in Yokosuka. Rear Adm. Walter F. James, M. C., who will accompany the group, will also serve as moderator for the symposiums. Following are the members of the group and their subjects for discussion:

W. E. Adams, M.D., Raymond Professor of Surgery, University of Chicago, Primary Carcinoma of the Lung—Some Significant Factors in Improving Surgical Therapy.

Edward L. Compere, M.D., Chairman, Department of Orthopedic Surgery, Northwestern University, Chicago, The Newer Developments in the Care of the Orthopedic Patient; The Prevention of Nonunion in the Treatment of Fractures.

W. McK. Craig, M.D., Head, Section of Neurological Surgery, Mayo Clinic, Rochester, Minn., The Neurosurgical Aspect of Trauma; Pain Syndromes and Their Treatment.

George Crile Jr., M.D., Head, Department of General Surgery, Cleveland Clinic, The Physiologic Versus the Anatomic Approach to Surgical Problems.

James Eckman, Ph.D., Section of Publications, Mayo Clinic, The Art of Getting Published; The Craft of Medical Writing.

Paul W. Greeley, Chief, Division of Plastic Surgery, University of Illinois, Chicago, Surgical Treatment of Soft Tissue Wounds (including skin grafting procedures).

John S. Lundy, M.D., Head, Section of Anesthesiology, Mayo Clinic, Balanced Anesthesia (including new drugs for preoperative medication, technique to avoid fire and explosion hazards, use of intratracheal tube, use of rectal Pentothal for children, and new drugs for postoperative pain relief).

Alphonse McMahon, M.D., Associate Professor of Medicine, St. Louis University School of Medicine, Therapy of Hypertension.

Gilbert H. Marquardt, M.D., Associate Professor of Medicine, Northwestern University, Chicago, Coronary Artery Disease.

S. A. Morton, M.D., Head, Department of Radiology, Marquette University, Milwaukee, Gastric Ulcer, the Indications for Surgery with X-ray Differentiation of Benign and Malignant Lesions.

J. Peerman Nesselrod, M.D., Assistant Professor of Surgery, Northwestern University Medical School, Chicago, Technique and Value of Proctosigmoidoscopy (with slides and colored movies); Treatment of Common Anorectal Disorders (with slides).

Waltman Walters, M.D., Head, Section of Surgery, Mayo Clinic, Billroth I and Billroth II Gastric Resection and Vagotomy with Gastroenterostomy in the Treatment of Peptic Ulcer: A 5 to 10 Year Follow-up.

Commander J. F. Buckner, M.S.C., Administrative Officer, District Medical Office, Ninth Naval District, Great Lakes, Ill.

PUBLIC HEALTH SERVICE

Territorial Water Pollution Control Needs.—The Public Health Service has released plans for the water pollution control needs of Hawaii, Puerto Rico, and the Virgin Islands. A report on Alaska will be announced later. Water pollution control needs for Hawaii include additions to existing plants, or new plants and sewer systems in 18 districts of the Hawaiian Islands. The Puerto Rico plan named 75 cities and towns needing additions, replacements, or new sewage treatment plants. In the Virgin Islands the report showed new plants are needed at Charlotte Amalie, St. Thomas; Cruz Bay, St. John; and Christiansted and Frederiksted, St. Croix.

The new Water Pollution Control Act authorized federal grants of 50 million dollars a year (up to a total of 500 million dollars) to help communities build sewage treatment plants. Hawaii has been allocated $496,100; Puerto Rico, $1,185,000; and the Virgin Islands, $830,000 for construction of waste treatment works during the current fiscal year.

Senior Research Fellowships.—The surgeon general, Dr. Leroy E. Burney, has announced that applications for Senior Research Fellowships will be received from now until Sept. 1, 1957. Awards will be made about Dec. 1, 1957. This program is designed to attract and hold able investigators in the basic sciences in the preclinical departments of medical schools, dental schools, and schools of public health. These fellowships are awarded for five years and are renewable.

No stipend ceiling is established by the Public Health Service for the Senior Research Fellowship. Instead, it is intended that the university request an amount for salary that it deems most appropriate. Information may be obtained from the Chief, Research Fellowships Branch, Division of Research Grants, National Institutes of Health, Bethesda 14, Md.

DEATHS

Bristol, Leverett Dale, Harrisburg, Pa.; born in Chicago in 1880; Johns Hopkins University School of Medicine, Baltimore, 1907; received a doctor of public health from Harvard University in 1916; after practicing medicine in St. Paul, went to the Syracuse (N. Y.) College of Medicine in 1913 as associate professor of bacteriology; from 1914 to 1916 was professor of bacteriology at the University of North Dakota School of Medicine, Grand Forks, and director of the laboratories of the state health department; for a year in 1916 was a member of the faculty of Harvard Medical School, Boston; served as state commissioner of health of Maine from 1917 to 1921; professor of preventive medicine and public health at the University of Minnesota Medical School, Minneapolis, for a year in 1922; first county-wide health officer in New York State; for many years director of health demonstrations in Cattaragus County, N. Y., and in the Bellevue-Yorkville section of New York City; in 1929 became health director of the American Telephone and Telegraph Company; past-president of the New Jersey Health and Sanitary Association and the Montclair (N. J.) Council of Social Agencies; served as executive director of the Hospital Council of Greater New York and chairman of the health advisory council of the Chamber of Commerce of the United States; in 1946 appointed chairman of the National Committee on Medical Care of the American Public Welfare Association; director of the cancer control division of the Pennsylvania State Department of Health, from which he retired in 1949; fellow of the Occupational Health Section of the American Public Health Association; specialist certified by the American Board of Preventive Medicine; in 1936-1937 chairman of the Section on Preventive and Industrial Medicine and Public Health, American Medical Association, and a charter member of its Council on Industrial Health, serving until 1950; died Feb. 20, aged 76.

Novak, Emil ✦ Baltimore; born in Baltimore, March 8, 1884; Baltimore Medical College, 1904; assistant professor emeritus of gynecology at the Johns Hopkins University School of Medicine, where he was assistant professor of gynecology since 1915; served as associate professor of gynecology at his alma mater; later became associate professor of gynecology at the University of Maryland School of Medicine, College of Physicians and Surgeons; a member of the volunteer medical service during World War I; chairman, Section on Obstetrics, Gynecology and Abdominal Surgery, 1930-1931, American Medical Association; at one time secretary of the Baltimore City Medical Society; member of the American Association of Obstetricians and Gynecologists, American Gynecological Society, of which he was past-president, Southern Surgical Association, and the Endocrine Society; fellow and past-governor of the American College of Surgeons; honorary fellow of the Royal College of Obstetrics and Gynecology of Great Britain, Obstetrical Society of Edinburgh, Obstetrical Society of Glasgow, and the Royal Society of Medicine in London; honored in Germany, France, Austria, Brazil, Scotland, and Mexico; specialist certified by the American Board of Obstetrics and Gynecology; served as chief of staff of St. Agnes and Bon Secours hospitals; on the visiting staffs of the Hospital for the Women of Maryland and West Baltimore General Hospital; wrote more than 300 articles for scientific journals in this country and abroad; author of "Textbook of Gynecology," "Gynecologic and Obstetric Pathology," and "The Woman Asks the Doctor"; received honorary doctor of science degrees from Trinity College, Dublin, Ireland, and Tulane University in New Orleans; died Feb. 3, aged 72, of degenerative cardiovascular disease.

Phifer, Charles Herbert ✦ Chicago; born in Shumway, Ill., June 25, 1879; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; clinical professor of surgery emeritus at his alma mater, now known as the University of Illinois College of Medicine, where he joined the faculty in 1902 as an instructor in medicine, subsequently becoming associate in surgery, assistant professor of surgery, associate professor of surgery, and professor of surgery; member of the founders group of the American Board of Surgery; member of the House of Delegates of the American Medical Association from 1941 to 1956 and a member of its Council on Scientific Assembly since 1944; fellow of the American College of Surgeons; member of the Institute of Medicine of Chicago; past-president and in 1944 instrumental in organizing the annual clinical conference of the Chicago Medical Society; past-president of the Illinois State Medical Society; in 1942 appointed chairman of an advisory committee to aid the standing committee on public health of the Illinois State Council of Defense; during World War II served on a draft board and also was head of procurement and assignment of physicians, surgeons, dentists, and veterinarians for the Fifth Army Area; consultant in surgery at the Delnor Hospital in St. Charles, Shriners Hospital for Crippled Children, and the Illinois Masonic Hospital; on the surgical staff of the Illinois Central Hospital; died in the Illinois Research Hospital March 27, aged 77, of arteriosclerotic heart disease and endocarditis.

Benson, Robert Louis ✦ Portland, Ore.; born in Flint, Mich., May 30, 1880; Rush Medical College, Chicago, 1910; bacteriologist for the Florida State Board of Health from 1910 to 1912, when he joined the faculty of the University of Oregon Medical School as assistant professor of anatomy, subsequently becoming professor of pathology, professor of clinical pathology, assistant clinical professor of medicine, and professor emeritus of medicine; specialist certified by the American Board of Internal Medicine; past-president and vice-president of the American Society for the Study

of Allergy; member of the American Academy of Allergy, American Association for the Advancement of Science, American Heart Association, Pacific Interurban Clinical Club, North Pacific Society of Internal Medicine, and the Portland Academy of Medicine; past-president of the Multnomah County Medical Society; fellow of the American College of Physicians; veteran of World War I; served as a member of the advisory board to the Portland City Bureau of Health, as a member and president of the Oregon State Board of Health, as chairman of a governor's interim committee on the study of public health and welfare, and as a member of the Oregon State Public Welfare Commission; served as chairman of the committee on public policy of the Oregon State Medical Society; member of the staff of the Providence Hospital, where he died Jan. 20, aged 76.

Schiff, Leo Francis ✦ Plattsburgh, N. Y.; born Feb. 28, 1885; Cornell University Medical College, New York City, 1906; vice-president of the American Medical Association in 1952-1953 and a member of its House of Delegates from 1949 to 1955; a trustee and in 1951-1952 vice-president of the Medical Society of the State of New York; past-president of the Clinton County Medical Society and the Clinton County Tuberculosis and Public Health Association; member of the American Society of Clinical Pathologists and the American Public Health Association; for many years health officer of Plattsburgh; in 1921 was largely instrumental in the founding of the Merkel Memorial Laboratory, remaining as its director until 1952; one of the founders, for many years a member of the board of directors, and at the time of his death secretary of the board, Champlain Valley Federal Savings and Loan Association; served on the staffs of the Lake Placid (N. Y.) Memorial Hospital, the Champlain Valley Hospital, and the Physicians Hospital, where he died March 7, aged 72, of multiple myeloma.

Carter, Charles Franklin ✦ Dallas, Texas; Fort Worth (Texas) School of Medicine, Medical Department of Texas Christian University, 1913; specialist certified by the American Board of Pathology; fellow of the College of American Pathologists; charter member of the American Society of Clinical Pathologists; at one time vice-President of the Tri-State Medical Society-Arkansas, Louisiana and Texas; director, Carter's Clinical Laboratory; consulting pathologist, St. Louis Southwestern Railway Hospital, Texarkana, Ark; formerly instructor in pathology and applied microbiology, Parkland Hospital School of Nursing; served as director of laboratories at the Parkland Hospital; joint author with Dr. Alice L. Smith of "Microbiology and Pathology"; died in Gilmer Feb. 5, aged 66, of a heart attack.

Plondke, Frederick John ✦ White Bear Lake, Minn.; born in Bayley, Wis., Sept. 22, 1869; Sioux City (Iowa) College of Medicine, 1894; University of Pennsylvania Department of Medicine, Philadelphia, 1898; past-president of the Ramsey County Medical Society; professor of histology from 1901 to 1903 and professor of clinical pathology from 1903 to 1907, Hamline University Medical Department, Minneapolis; during World War I a medical officer in the Minnesota National Guard; for many years associated with the Ancker Hospital in St. Paul; founder, member of the hospital board, for many years medical director, and chief of the surgical service at St. John's Hospital, St. Paul, where he was chief of staff, and where he died Jan. 2, aged 87, of hypertensive heart disease and pulmonary edema.

Wies, David, Baltimore; born in Malden, Mass., March 29, 1910; Tufts College Medical School, Boston, 1935; interned at the Brockton Hospital in Brockton, Mass.; served a residency at the Boston City Hospital and the McLean Hospital in Belmont, Mass.; member of the Medical and Chirurgical Faculty of Maryland and the American Psychiatric Association; specialist certified by the American Board of Psychiatry and Neurology; certified by the National Board of Medical Examiners; served as consultant in psychiatry, city board of education; psychiatrist for the Jewish Big Brothers League; consultant for Sinai Hospital and the University of Maryland Hospital; died Jan. 18, aged 46, of brain tumor.

Bellas, Joseph John ✦ Farrell, Pa.; Medico-Chirurgical College of Philadelphia, 1914; member of the American Academy of General Practice; veteran of World War I; served as school physician for the West Middlesex Joint Consolidated Schools and the Wheatland School; died in the Abington (Pa.) Memorial Hospital Feb. 5, aged 66, of a heart attack.

Bhatta, William Kenneth ✦ Philadelphia; Temple University School of Medicine, Philadelphia, 1927; died in the Hospital of the University of Pennsylvania Feb. 13, aged 67, of myocardial infarction.

Black, Dennis Walls ✦ Lampasas, Texas; Vanderbilt University School of Medicine, Nashville, 1894; died Dec. 11, aged 84.

Bolin, Edward C., Columbus, Ohio; Physio-Medical College of Indiana, Indianapolis, 1889; died Dec. 21, aged 88.

Brandt, Frederic Charles ✦ New York City; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1924; veteran of World War II; associate visiting cardiologist at Sydenham Hospital; on the staff of the Medical Arts Center Hospital; died in the Mount Sinai Hospital Feb. 14, aged 56, of coronary thrombosis.

Brown, Polk Duncan, Major, U. S. Army, retired, San Antonio, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1900; service member of the American Medical Association; veteran of World War I; retired March 15, 1927; died Dec. 22, aged 81.

Bruechert, Stanley Schaefer ✦ Pasadena, Calif.; Rush Medical College, Chicago, 1930; certified by the National Board of Medical Examiners; veteran of World War II; member of the American Academy of General Practice; on the staffs of St. Luke's, Collis P. and Howard Huntington Memorial, and the Alta Vista hospitals; died Feb. 2, aged 52.

Burg, Walter August ✦ Uniontown, Wash.; St. Louis University School of Medicine, 1910; veteran of World War I; on the staff of the St. Ignatius Hospital, Colfax; died Feb. 4, aged 70, of lung cancer.

Daglian, Parnag Thomas, New York City; American University of Beirut School of Medicine, Syria, 1906; died Jan. 8, aged 76, of heart disease and cancer.

Dailey, Oscar Silas ✦ Port Byron, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1895; on the staffs of the Lutheran Hospital and Moline Public Hospital, in Moline, where he died Jan. 31, aged 88, of coronary thrombosis and arteriosclerosis.

Deering, David N. ✦ Antioch, Ill.; University of Nebraska College of Medicine, Omaha, 1925; veteran of World War II; local health officer; on the staff of the Victory Memorial Hospital in Waukegan; died in the Veterans Administration Hospital in Hines, Feb. 18, aged 57, of left middle cerebral artery thrombosis.

Deering, George Edwin Sr. ✦ Worcester, Mass.; Harvard Medical School, Boston, 1904; consulting surgeon and for many years served on the staff of the Worcester City Hospital, where at one time he was assistant superintendent; died Dec. 31, aged 79, of a heart block.

Doak, James Robert, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1901; past-president of the Wilson County Medical Society; at one time health officer of Watertown; died in the McFarland Hospital, Lebanon, Feb. 1, aged 83.

Donaldson, Ralph Macfarland, North Hills, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1932; served on the staffs of the Abington (Pa.) Memorial Hospital and the Germantown Hospital in Philadelphia, where he died Feb. 11, aged 55, of coronary disease and diabetes mellitus.

Dunham, Grover Cleveland, Kempton, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; died Nov. 15, aged 72, of coronary occlusion and arteriosclerosis.

Durham, George W., Rayville, La.; Memphis (Tenn.) Hospital Medical College, 1902; died Jan. 14, aged 82, of arteriosclerotic heart disease.

Erxleben, Walter Oscar ✦ Batesville, Ind.; University of Michigan Medical School, Ann Arbor, 1932; certified by the National Board of Medical Examiners; veteran of World War II; on the staff of the Mary Margaret Hospital; died Feb. 22, aged 48, of acute myocardial infarction.

Fearns, Thomas J., ✦ Williston Park, N. Y.; Georgetown University School of Medicine, Washington, D. C., 1927; veteran of World War II; on the staff of the Manhasset (N. Y.) Medical Center Hospital and the Roslyn Park Hospital in Roslyn Heights; died Feb. 8, aged 54, of arteriosclerotic heart disease.

Felt, Paul Revere ✦ East Hampton, Conn.; Dartmouth Medical School, Hanover, N. H., 1910; specialist certified by the American Board of Psychiatry and Neurology; for many years associated with the Connecticut State Hospital; died Feb. 4, aged 74, of cerebral hemorrhage.

Fife, Joseph, San Francisco; Cooper Medical College, San Francisco, 1896; died Feb. 6, aged 87, of coronary occlusion and arteriosclerosis.

Jones, William Wendell, Frankfort, Ind.; Indiana University School of Medicine, Indianapolis, 1929; member of the Indiana State Medical Association; died Oct. 20, aged 50, of rupture of the esophagus with hemorrhage.

Jungster, Max ✦ New York City; Julius-Maximilians-Universität Medizinische Fakultät, Würzburg, Bavaria, Germany, 1912; died Dec. 28, aged 68, of coronary occlusion and arteriosclerosis.

Katz, Meyer Joseph, New York City; Jefferson Medical College of Philadelphia, 1903; chairman of the local school board; on the staff of the Beth Israel Hospital; died in the Manhattan General Hospital Dec. 30, aged 76, of torsion of the intestine, postoperative.

Kitson, Walter Walwin, Atlantic, Iowa; State University of Iowa College of Medicine, Iowa City, 1920; an associate member of the American Medical Association; veteran of World War I; on the staff of the Atlantic Memorial Hospital; died in the Mental Health Institute, Clarinda, Dec. 15, aged 66, of coronary thrombosis and arteriosclerotic heart disease.

Kramer, Joseph Arthur, Parker, Ind.; Louisville (Ky.) and Hospital Medical College, 1908; for many years medical examiner for the Norfolk and Western Railroad; died Jan. 31, aged 82, of cerebral hemorrhage.

Kress, Daniel Hartman, Orlando, Fla.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1894; an associate member of the American Medical Association; died Nov. 1, aged 94, of cerebral arteriosclerosis.

Marshall, Homer Clayton Jr., ✦ Springfield, Mo.; Washington University School of Medicine, St. Louis, 1944; specialist certified by the American Board of Internal Medicine; captain in the medical corps, Army of the United States from 1945 to 1947; on the staffs of the Burge and St. John's hospitals; died Feb. 23, aged 37.

Martin, Edward Thomas, Camarillo, Calif.; Milwaukee Medical College, 1911; on the staff of the Camarillo State Hospital, where he died on the grounds, Dec. 23, aged 66, of coronary occlusion.

Mason, Lyle Millan ✦ Washington, D. C.; George Washington University School of Medicine, Washington, 1918; member of the American Urological Association; fellow of the American College of Surgeons; on the staffs of St. Elizabeth Hospital and the Garfield Memorial Hospital, where he died Feb. 13, aged 65, of cancer.

Morris, Max, Brooklyn; University of Buffalo School of Medicine, 1914; member of the Medical Society of the State of New York; veteran of World War II; on the staff of the Coney Island Hospital; died in Miami, Fla., Dec. 17, aged 65, of congestive heart failure.

Myerdick, Albert Hoffman, Mount Pleasant, Iowa; St. Louis College of Physicians and Surgeons, 1899; Washington University School of Medicine, St. Louis, 1903; veteran of World War I; at one time physician for the public schools in St. Louis; died Jan. 27, aged 82.

FOREIGN LETTERS

AUSTRIA

Poisoning in Children.—At the same meeting, H. Orel reported on 13 children, 11 babies and 2 of school age, who had ingested poisons carelessly left by parents or supervising persons where they could reach them. Eight patients had swallowed drugs, six having swallowed drugs intended for their own treatment. In 11 cases the poisoning occurred at home, one while visiting, and one on the way home from the drug store. The ingested poisons included formaldehyde, petroleum (in a beer bottle), ethylene trichloride, a preparation of diphenyl dimethylamino ethylbutanone hydrochloride (Ticarda), a copper compound (Santoperonin), strychnine, a barbiturate, benzine, and antihistamines. None of the patients died. The coatings of bitter drugs often give them the shape, color, and taste of candies. Poisonings will occur as long as such preparations are not well hidden from children. The buyers of the drug should be cautioned by the physician and the druggist if the preparation contains a dangerous poison. Meaningless labels, such as "Ebewe 2" (a proprietary preparation of strychnine nitrate) should not be used, because not even the physician could know from the label alone that this preparation contains a poison. A 22-month-old baby ingested 5 or 6 tablets of Ebewe 2. Hungry 8-year-old and 10-year-old siblings each ate 4 tablets of Destrydon (also a strychnine preparation), which they had found in the kitchen cupboard. These cases indicate the need for more careful labeling of such preparations. K. Kundratitz cautioned against the routine administration of milk to all patients with symptoms of poisoning, since fat-soluble poisons are dissolved by milk and are, therefore, more easily absorbed.

Evaluation of New Sedatives.—At the meeting of the Society of Viennese Physicians on Jan. 25, O. H. Arnold and St. Hift summarized their observations on the actions of such sedatives as chlorpromazine, reserpine, Pacatol, Biomat, Myoscain, and Covatin. The use of sedatives in practice should always be coordinated with psychotherapy. The effect on such symptoms as anxiety, unrest, and excitement is important. This treatment is dangerous in psychotic patients, because it masks the symptoms and delays starting definitive therapy. The indications for treatment depend on the condition of the patient.

Commemoration of von Jauregg.—A combined meeting of the Vienna Society of Physicians and the Vienna Society for Psychiatry and Neurology was held on March 8 in commemoration of the 100th anniversary of the birthday of Prof. Julius Wagner von Jauregg. W. Denk said that von Jauregg was one of the greatest representatives of the medical profession in Vienna. He was elected Permanent Honorary President of the Vienna Medical Association on his 90th birthday. L. Schönbauer spoke of von Jauregg's contribution to medical education. He succeeded in having pediatrics, psychiatry, and dermatology established as separate departments of required medical study. H. Hoff stated that, although von Jauregg's therapeutic induction of malaria in patients with dementia paralytica has been modified since the discovery of penicillin, it marked a great advance in treatment. Penicillin, however, clears the spinal fluid without producing the excellent psychic results of malariotherapy. Today the most effective therapy appears to be combined treatment with malaria and penicillin.

Meconium Ileus.—At the meeting of the Vienna Pediatric Society in December, G. Wolf reported on seven infants with meconium ileus. These patients had bilious or fecal vomiting and diffuse meteorism and passed little or no meconium. In some, there was a familial history of similar complaints or of infants with intestinal atresia or stenosis. Plain roentgenograms of the abdomen showed the characteristic granular areas caused by air bubbles in the thickened meconium.

ISRAEL

Physician Survey.—In December, the Central Bureau of Statistics published figures on the number of physicians in Israel at the end of 1955. From the establishment of the state of Israel in 1948 to the end of 1955, 4,128 licenses were issued to physicians by the Ministry of Health. In these seven and a half years, 189 of these doctors died, 61 left the country, and 4 surrendered their license, apparently because they had no intention of practicing medicine. The actual number of physicians with permanent licenses was, therefore, 3,874. Temporary licenses were held by 94, and there were 95 interns. Of the 3,874 licensed physicians, 828, or 21.4%, were women. This is a high proportion in comparison with western countries. In Russia the proportion of women is even higher (about 75%). Over half of the total are between 40 and 60 years of age, while almost another 25% are 60 years or over. Most of Israel's physicians (about 3,000) were born in eastern or central Europe. They immigrated many years ago from Poland, Germany, or Austria. The next largest group (274) is made up of those born in the Balkans who immigrated after 1948. The Middle Eastern countries, which have contributed a high percentage to Israel's population, have brought only a small number of physicians (155, or 4%, of the total). There were 951 physicians working in hospitals and 2,923 who only occasionally attended hospitalized patients. Of the last group, 2,252 worked in cities. This number corresponds to the proportion of the general population living in urban areas. The dispersion of the rural population, however, works greater hardships on it and its physicians as well.

According to the statistics of Kupat Holim, each insured person on its panel sought medical advice an average of 8.27 times in 1954 and 8.44 times in 1955.

The items in these letters are contributed by regular correspondents in the various foreign countries.

The National Workers' Sick Fund shows a much higher frequency of visits, reaching the surprising figure of 14.46 per person per year. Kupat Holim dispenses almost 11 prescriptions per person per annum. The proportion of visits to specialists is also high in Israel. Kupat Holim members visit specialists 1.5 to 1.6 times a year. The corresponding figure for England is 0.15. Here an explanation may be found in the composition of the Israeli medical manpower. Of 3,874 physicians, only 862 were registered as general practitioners.

PERU

Public Health.—In the current program for improving the public health one of the most important items is increased aid to medical education. Beginning this year, the National Health Fund will allot 2 million dollars annually for this purpose. Other measures include environmental sanitation, reorganization of the Ministry of Public Health, and education of the populace in matters of hygiene and sanitation. The Minister of Public Health stated that of 97,000 deaths occurring in 1953 nearly 67,000 lacked medical certification. Deaths in the first decade of life still account for one-half of all deaths. Tuberculosis, leprosy, malaria, rabies, and intestinal parasitism are urgent public health problems. There is evidence that the incidence and death rate from tuberculosis and perhaps other diseases in the above list are increasing. This also applies to cardiovascular diseases, brucellosis, and hydatidosis. Dental caries occurs at an early age and is present in 40 to 80% of the population. A lack of health officers is another problem. Only 45 of the 1,275 districts and 106 of the 141 provinces have an officially appointed health officer. The existing health officers work under a heavy handicap.

The Ministry's five-year plan includes the construction of 300 rural health centers. In addition, sanitary units will be built in isolated areas and fitted with an outpatient dispensary, 8-to-15-bed infirmary, and small laboratory; motor vehicles will also be available. The work of these units will be directed by about four regional sanitary health centers. Maternal and child welfare will be stressed. The old Navy hospital in Lima is being converted into a maternity hospital and the old Army hospital will become an outpatient maternal and child welfare center. Dietitians will supervise the popular restaurants supported by the Ministry of Public Health in order to assure better balance of the meals served. Starting this year, the societies that support charity hospitals will receive regular aid from the National Health Fund. The concentration of physicians in cities, particularly in Lima, constitutes another problem. At present, of about 3,400 physicians in active practice in Peru, 2,260 of them, or 63%, are in Lima. On the other hand, there are regions in which there is only one physician for 20,000 or 30,000 inhabitants. The Ministry of Public Health is seeking a workable plan that will result in a more equitable distribution of physicians.

Social and Medical Assistance for the Amazonian Region.—The population of the Peruvian east, a thickly forested region and the source of the Amazon River, is mostly aboriginal living under primitive conditions. A private organization, headed by the psychiatrist Honorio F. Delgado, has been created to improve the lot of these people. Malnutrition and ignorance of the most elemental principles of hygiene are prevalent among them. This accounts for their high infant death rate, which in some communities reaches 90% of the population under 5 years of age. Tuberculosis, intestinal parasitism, typhus, leprosy, malaria, and many other infectious diseases are all too common. Some entire tribes have been reported to have been annihilated by epidemic bouts of some of these diseases. The high incidence and mortality among these people has prompted the Amazonian Association to urge the construction of a 100-bed hospital, which will be located near Pucallpa, one of the most progressive cities of the forest, because of the easy access to it.

Alcoholism.—In their book entitled "Alcoholism: A Public Health Problem," Baltazar Caravedo and Almeida Vargas conclude that the consumption of alcoholic drinks has increased in geometric proportion in the last 15 years. Among the countries with available data concerning alcohol consumption, Peru occupies seventh place as to total alcohol consumption per capita and first place as to the per capita consumption of spirituous drinks, especially pisco and rum. As a result, the problem of alcoholism is graver in Peru than in countries where beer and wine are the chief alcoholic beverages consumed. This fact aggravates the malnutrition problem affecting a large proportion of the population, especially those belonging to the poorer socioeconomic classes. A further unfortunate aspect of the problem is the fact that 70% of the alcohol consumed is not rectified and, therefore, carries a high degree of toxic impurities. Alcoholism accounts for 60% of the arrests, is a factor in 33% of the transgressions of the law, and is responsible for 35% of the traffic accidents. It occupies third place among the causes of admission to the mental hospital in Lima. From an economic viewpoint, it represents 30% of the annual general budget and it causes the waste of 5.6% of the national income. The authors recommend a higher tax on liquors, which would furnish money to support a campaign for control of alcoholism. They also advise the creation of a center for the reeducation and treatment of the addict by the mental hygiene department.

Amphetamine and Pyridoxine in Acute Alcoholism.—Experimental animals were subjected to alcoholic intoxication and then treated with amphetamine and pyridoxine by Dr. González Huerta (*Revista del Viernes Médico*, vol. 7, no. 1, 1956), who reports that both drugs help the recuperation of the animals. Although the drugs reduced the blood alcohol level, amphetamine was the more effective. This action of amphetamine was not exclusively due to interference with the absorption of alcohol by the gastrointestinal tract, as Rinkel and Myerson have suggested, but was also due to hastening of the peripheral metabolism of the alcohol. On the other hand, despite the fact that the stimulant effect of pyridoxine is slightly less than that of amphetamine, it gives rise to neither the psychomotor agitation nor the disturbances of the

autonomic nervous system that accompany the use of the latter drug. The body temperature, brought down by the intravenous administration of alcohol, tended to return to normal after the injection of either amphetamine or pyridoxine, specially after the former.

UNICEF and Peru.—Since 1950 UNICEF has afforded valuable help to Peru. Chief among the campaigns supported by this agency are (1) a program of immunization against pertussis and diphtheria; (2) coastal mosquito control; (3) chlorophenothane (DDT) spraying of homes and inhabitants to control typhus, the incidence of the disease having been reduced at the end of the campaign from 23.9 to 4.6 per 100,000 inhabitants; and (4) antimalarial measures. In addition, powdered milk and vitamin capsules will be distributed among the school children.

PORTUGAL

Experimental Pneumoconiosis.—J. Horta and C. Cancela (*J. Soc. Ciencias Medicas da Lisboa* **5**:120, 1956) found in many men working with cork a pulmonary illness resembling tuberculosis but without tubercle bacilli in the sputum. When these patients were away from their work, their cough, dyspnea, and general condition improved quickly. In the belief that the pneumopathy was caused by the inhalation of cork dust, the authors exposed rabbits and guinea pigs for long periods to the conditions of the patients' work and injected sterile cork dust intraperitoneally and in the pulmonary veins of the animals. This caused a severe reaction in the lungs, with proliferation of the large alveolar cells, increased number of the septal fibroblasts, and even the formation of pneumoconiotic nodules. The production of this experimental illness suggests that also in man there is a pneumoconiosis produced by cork dusts.

Aspiration of Foreign Bodies.—Armando Tavares (*Portugal Medico* **40**:597, 1956) writes that the aspiration of foreign bodies by children can cause pulmonary syndromes whose clinical and radiologic interpretation is sometimes difficult if the history is not known. He reports three such cases in children 6 months, 16 months, and 2½ years old respectively, in whom the aspiration of a kernel of corn, wild grass, and an olive stone unsuspected by the parents resulted in tentative diagnoses of primitive bronchopneumonia, pleurisy, and primary tuberculosis. In two cases the foreign bodies were expelled spontaneously, but in the third it had to be removed through a bronchoscope.

Primary Carcinoma of the Liver.—Armando Mendonça (*Gazeta Medica Portuguesa* **9**:599, 1956) reports on 15 cases of primary hepatic carcinoma. The disease is rare in Europe. It occurs in late adult life but has been observed in children. Metastases in the author's series of patients were rare. Hepatomas reproducing fairly well the normal hepatic structures are more frequent than cholangiomas, and they may even produce bile, both in primary tumors and in metastases. There was a definite association with hepatic cirrhosis and nutritional deficiency. The association with cirrhosis was seen more commonly in hepatomas than in cholangiomas. No typical syndrome was observed, and most cases were diagnosed at autopsy. Biopsy is of little value as a diagnostic method. Once the condition is diagnosed, the treatment is surgical.

SWITZERLAND

Sulfonamides with Hypoglycemic Effect.—Bonhote and Constam (*Helvetica medica acta* **23**:480 [Nov.] 1956) report that the hyperglycemic and glycogenolytic action of glucagon given intravenously was not altered by the presence of sulfonylureas. The curve of glycemia, remaining proportional to the dose of injected glucagon, was the same before and after treatment with hypoglycemic sulfonamides. The same applied to epinephrine. The formation and secretion of glucocorticoid was also unaffected by the presence of sulfonylureas. The urinary steroids and plasma corticoids show the same changes under the influence of corticotropin before and after the administration of the hypoglycemic sulfonamides. The same applied to the eosinophils. The authors observed in the course of one clinical experiment only that the sulfonamides did not exert any action on the growth hormone or on the somatotropic hormones if hypophysial insufficiency was present. These results show, therefore, that the hypoglycemic action of sulfonylureas does not work by inhibiting the corticoadrenal or the pituitary-inhibiting hormones.

With regard to whether the sulfonylureas therefore activate the formation and secretion of insulin or increase its action with an eventual inhibition of the disintegrating processes of insulin itself, Mirsky showed that the sulfonylureas inhibit insulinase but do not compete with it. Overdoses of insulin were given to a series of diabetic patients. One-half responded but the other half was refractory to sulfonylureas. These overdoses seem to show that these substances do not intensify the action of exogenous insulin. The statement of other Swiss authors that this action appears through endogenous insulin seems, therefore, to be confirmed. These authors stated that the sulfonylureas act in patient with sthenic diabetes who still produce insulin, though not sufficiently, but that they are without effect in patients with asthenic diabetes caused by lack of insulin. The sulfonylureas improve glucose tolerance.

The authors also studied the action of these substances before and after overdoses with fructose given intravenously, since this carbohydrate is changed rapidly into glucose in the liver. They found that sulfonylureas do not inhibit either the formation of glucose by the liver or gluconeogenesis. They assume that the action of endogenous insulin has to be definitely proved. At present it seems that this action consists in an enzymatic inhibition of the insulinase.

UNITED KINGDOM

Activity of Poliomyelitis Vaccine.—During 1956 three batches of poliomyelitis vaccine were used for the inoculation of 200,000 children. A team appointed by the Medical Research Council investigated the antigenic activity of these three batches in a group of 196 children, aged 1 to 11 years, from five widely sepa-

rated areas in the country. Antigenicity was also tested on monkeys. Serums from all the children, who, previous to inoculation, had had no detectable poliomyelitis antibodies, were titrated against Brunenders (type 1), MEF-1 (type 2), and Saukett (type 3) viruses, from which the vaccine had been prepared. It differed in its type 1 component from that produced in the United States, the Mahoney strain having been replaced by a partially attenuated variant of the Brunhilde strain (the Brunenders strain, named after Brunhilde and Enders). Antibody response was tested at various titers of poliomyelitis virus. Averaging the results obtained in all districts, the mean antigenic response was at titers of 1:72, 1:282, and 1:101 for vaccines of virus types 1, 2, and 3, respectively. The results were similar to those obtained by Salk, and they show that the vaccine produced an antibody response to all three types of poliomyelitis virus in a high proportion of children. Thus far there is insufficient information available to permit a definite decision on the response required in the monkey test in order to insure that a vaccine will give an adequate response in children.

Estrogen Excretion and Vaginal Cytology.—It is desirable in the treatment of metastatic breast cancer, by the use of hormones or by the removal of endocrine organs, that the hormonal status of the patient be assessed. It is not possible to estimate the amount of circulating estrogen, and the method of measuring urinary estrogens is too elaborate and costly for routine clinical use. Bulbrook and Greenwood (*Lancet* **1**:350, 1957) have measured the urinary excretion of estrone, estradiol, and estriol in 24-hour specimens from 75 women and have correlated the findings with the cellular pattern of the vaginal fluid. Smears were prepared from the latter, the intensity of estrogenic stimulation being determined by observing the number of deep and cornified cells and estimating the number of glycogen-containing cells. A good correlation was observed between vaginal cytology and the urinary output of estrogen, measured chemically. The best correlation was that of estriol.

Exposure of Nurses to Irradiation.—Godfrey and coworkers (*Lancet* **1**:363, 1957) observed the amount of irradiation to which nurses were exposed in wards in which patients were treated with radium and radioisotopes. The nurses at risk wore film-badges, similar to those used by radiographers. Five of the 137 badges recorded more than 300 mr in one week. On an average, each nurse in these wards might expect to receive an exposure of more than 300 mr at least twice a year. The average amount of radiation per nurse-week was 20 mr. The International Commission on Radiological Protection recommends that exposure should not exceed 30 mr per week when a substantial portion of the body is irradiated. This condition is only just fulfilled. In other wards the exposure ranged from 10 to 13 mr per week, with an average of just over 10 mr per week. This is higher than the natural radiation level of 2 mr per week. When a nurse is required to hold a patient in the beam of radiation or to hold a plate, she should be provided with a lead-rubber apron and lead-rubber gloves.

Poliomyelitis in an Isolated Community.—Macrae (*Brit. M. J.* **1**:368, 1957) investigated an area in Scotland on the west coast of Ross-shire and on the north shore of Upper Loch Torridon, where no one remembers any report of poliomyelitis ever being made. This area is very isolated. In the spring and autumn, samples of feces or serum or both were obtained from the inhabitants of half the houses of Torridon, care being taken to obtain specimens from the youngest child in each family selected. Most of the children examined had no antibody to any type of poliomyelitis virus. An increasing number of the inhabitants, beyond the age of 30 years, showed evidence of circulating antibody to one or more types of virus, indicating that immunity develops late in life in this area. Although Torridon is isolated, it can be reached from London within the day. The freedom from poliomyelitis is largely explained by the infrequent contacts with the outside world.

Royal College of Surgeons.—The Royal College of Surgeons held its annual meeting in December. Sir Harry Platt, the president, stressed that the college is more than an examining body or a teaching body; it is also carrying out much research. The recently created faculties of dental surgery and anesthetics are going ahead, each with its research department. Sir Archibald McIndoe, chairman of the finance committee, said that, although the college had obtained many donations, its financial position could only be described as gloomy in regard to both the running expenses and the rebuilding fund. The erection of the third part of the new building will have to be stopped my midsummer unless more money is received. On domestic expenditure there was a deficit of $30,800 due to the widening scope of the college's activities and rising costs. The future will also be affected by the question of whether the college will be subject to full taxation, as this would mean an annual payment of $53,200 instead of $14,000.

Wider Registration of Medical Ancillary Groups.—State registration of members of eight ancillary branches of the medical profession is likely soon. The services concerned are those of the chiropodists, dietitians, medical laboratory technicians, occupational therapists, physiotherapists, radiologic technicians, remedial gymnasts, and speech therapists. If practitioners of these services vote in favor of government registration, a bill to set up such a regsitration will be introduced in Parliament. The bill will not prohibit unregistered persons from practicing, but it will make it illegal for anyone not on the appropriate register to describe himself as a registered chiropodist, dietitian, etc. Employment within the National Health Service would be limited to registered persons.

Vested Interests.—In his annual report for 1956, the health officer of Kirkcaldy, Scotland, points out that opposition to public health measures by vested interests is not a thing of the past. Recent legislation to promote clean air and clean streams is not particularly effective when one considers the loopholes provided in the Clean Air Bill and the fact that the river pollution boards are made up of representatives of the main offenders.

CORRESPONDENCE

PNEUMOROENTGENOGRAPHY FOR PELVIC STRUCTURES

To the Editor:—The article on intersexuality in the Feb. 16 issue of THE JOURNAL, page 538, is an excellent one, even though it is a brief account of this most interesting condition. However, I feel that there was one important omission in Dr. Morris' discussion of diagnosis of intersexuality in infants and children. He failed to mention the use of pneumoroentgenography in diagnosing the presence or absence of female pelvic structures in these controversial cases. For the past 35 years I have employed pneumoroentgenographic methods, and I have referred to their use in just such cases in several publications (*Radiology* **28**:391-398 [April] 1937; *M. Clin. North America* **27**:55-65 [Jan.] 1943). Kunstadter and co-workers also reported the successful employment of pneumoroentgenography in a series of cases of intersexuality in infants (Kunstadter and Tulsky: *Am. J. Obst. & Gynec.* **68**:819-829 [Sept.] 1954; Kunstadter, Guterman, and Tulsky: *A. M. A. Am. J. Dis. Child.* **86**:275-283 [Sept.] 1953).

Exploratory laparotomy, recommended by Dr. Morris, is entirely unwarranted so long as there are safe and practical methods of visual diagnosis available. Pneumoroentgenography qualifies as such a method. Peritoneoscopy and culdoscopy have been used in adults as visual methods but are rarely employed for this purpose in infants. While examinations made with illuminating instruments or at laparotomy are limited to the single observation, the films taken by gynecographic methods are permanent records. They may be reviewed by several observers and also may be filed for comparison with data obtained when the child is older. I have recommended that gynecography (of which pneumoroentgenography is one portion and hysterosalpingography the other component) should be available in all roentgenologic laboratories and that the method should be taught in all medical schools.

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To the Editor:—Dr. Irving F. Stein has very kindly forwarded to me a copy of his letter regarding my article on intersexuality. In this letter he states, "Exploratory laparotomy, recommended by Dr. Morris, is entirely unwarranted so long as there are safe and practical methods of visual diagnosis available. Pneumoroentgenography qualifies as such a method."

I am afraid the fault is mine for not making my point clearer in the article. The only reason for early surgical exploration (not necessarily laparotomy) is to make a biopsy study of the gonads in order to avoid the error of rearing the patient in the wrong sex. The necessity for surgical determination of sex is limited to the cases with intersexual genital development in which congenital adrenal hyperplasia has been ruled out. Even in these cases, the answer would be given by the somatic sex chromatin except for the fact that in the true hermaphrodite this may be either male or female. Thus an individual with male sex chromatin who appears to be a male pseudohermaphrodite may actually be a true hermaphrodite and vice versa. X-ray studies of the pelvic organs in these cases, will, of course, not reveal the histological status of the gonads. I apologize that my reasons for biopsy were not made more clearly, but perhaps it may be excused on the basis of attempting to be brief.

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CALCULATION OF DIETS

To the Editor:—In a letter to the Editor in THE JOURNAL of Feb. 2, 1957, page 384, Dr. Max Wishnofsky raises some objections to my Clinical Note "A Simple Aid in Calculation of Diets," which appeared in the Nov. 24, 1956, issue of THE JOURNAL, page 1233. In criticizing my assumption that half of every pound of body weight gained is fat and half is water, he states that the average fat content of human adipose tissue has been found to be not 50%, but 87%. Nevertheless, "in general, the body weight changes about twice as much as the change in fat" (Keys, A., in Clinical Nutrition, edited by N. Jolliffe, F. F. Tisdall, and P. R. Cannon, New York, Paul B. Hoeber, Inc., 1950, page 236). In attempting to reconcile this with the data cited by Dr. Wishnofsky, one might hypothesize that a considerable amount of water is stored with the "tissue fat" as opposed to the "depot fat" or adipose tissue.

The caloric allowance of 35 calories per kilogram is not predicated upon basal conditions. Further, it is assumed that, in general, increasing obesity will cause energy expenditure to be elevated above the basal level to a correspondingly decreasing degree. This variation and the one pointed out by Dr. Wishnofsky are expected approximately to cancel each other out.

The method of diet calculation which I proposed, based on assumptions which are admittedly only approximately correct, of course cannot predict weight changes exactly. The points raised by Dr. Wishnofsky are certainly valid. Unfortunately, an attempt to incorporate these ideas into a method of computing diets would seriously detract from its simplicity, to say the least. At any rate, I believe that any errors introduced would be swallowed up by the much larger errors inherent in an assumed "ideal" weight and a standardized energy expenditure of 35 calories per kilogram.

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MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Treatment of Mumps Orchitis with Adrenal Hormones: Report of Twenty-Three Cases with a Note on Hepatic Involvement. R. G. Petersdorf and I. L. Bennett Jr. A. M. A. Arch. Int. Med. 99:222-233 (Feb.) 1957 [Chicago].

Cortisone and related compounds were used in the treatment of 23 patients with mumps orchitis in the past 4 years. Orchitis was preceded by parotitis in 20 of these, the interval between the onset of parotid swelling and testicular involvement ranging from 1 to 10 days. In 2 of the other 3 patients, parotitis and orchitis were noted simultaneously. In the remaining patient there was no evidence of salivary adenitis at any time, although the diagnosis of mumps was suspected from the history of exposure and the presence of spinal fluid pleocytosis. This clinical impression was confirmed by a rise in complement-fixation titer for mumps to 1:64. Comparison of the clinical findings in these 23 sporadic cases of mumps orchitis with those in groups of consecutive cases in epidemics suggests that they were of more nearly average severity. Both testes were involved in 9 (39%) of the patients, while in other reports the incidence of bilateral involvement ranged from 10.6 to 18.2%.

Twenty-one patients were given cortisone, 1 received repository corticotropin injection intramuscularly, and 1 was treated with prednisone. With the exception of corticotropin, drugs were given orally unless nausea made it necessary to use the parenteral route. The most satisfactory program appeared to be an initial dose of 300 mg. of cortisone followed by 200 mg. daily with rapid tapering of dosage as soon as clinical response allowed. Duration of treatment ranged from 3 to 18 days. The average dosage of cortisone was 1.1 Gm. over a period of 7 days. Twenty-two of the 23 patients given corticosteroids experienced striking objective and subjective relief. Amelioration of pain and decrease in swelling was noticeable during the first 24 hours in 14 of the patients, and within 48 hours none of the 22 had more than slight testicular tenderness on palpation. Defervescence occurred in 12 patients in less than 24 hours. Three patients with pancreatitis continued to have upper abdominal pain and nausea after testicular swelling had subsided. Defervescence was less prompt in these 3 patients. Although the effect of cortisone on pancreatitis was not one of dramatic amelioration, it cannot be said that cortisone had no influence on pancreatitis.

There were no untoward effects of steroid therapy on blood pressure, carbohydrate metabolism, or gastrointestinal function, and no mental aberrations were noted in any patient. Of the 13 patients in whom follow-up examinations were carried out from 1 to 6 months after discharge from the hospital, 8 showed no residual testicular atrophy. One of this group had had azoospermia during the acute illness but showed no atrophy of the testes 6 months later. Three of the 5 patients who developed testicular atrophy or azoospermia required more than 36 hours for defervescence on steroids. All of the 8 without residual atrophy had defervescence in less than 36 hours. Nine of 11 patients in whom liver-function tests were performed showed definite abnormalities. In 5 instances, these were severe enough to cause concern, although in all cases hepatic function returned toward normal as the acute illness subsided. Since there is little documentation of hepatic involvement in mumps, the authors suggest systematic investigation of this feature of the disease.

Observations on the Reticulocytes in the Bone Marrow in the Course of Various Hematological Disorders. A. De Vries, G. Izak and M. Bruderman. Rev. hemat. 11:486-494 (Nov.-Dec.) 1956 (In French) [Paris].

The authors studied the quantitative relationship between the reticulocytes and the other cellular elements of bone marrow in 8 normal subjects and in 22 patients with various hematological disorders. The patients included 9 males and 13 females ranging in age from 13 to 72 years. Five had pernicious anemia, 2 had acquired hemolytic anemia, 2 had refractory anemia with hyperplasia of the marrow, 9 had hypochromic anemia, 2 had chronic lymphocytic leukemia, and 2 had familial splenic anemia. Stained smears of bone marrow were obtained by punctures of the sternum or the iliac crest. Such smears were obtained from all patients when they first came under observation, and in the majority at least 1 examination was made after cure. The reticulocytes and the erythrocytes of the venous blood were counted at the time the bone marrow was examined. It was found that in the marrow of healthy subjects the reticulocytes represented from 42 to 59% of the immature red blood cells (including reticulocytes) and from 18 to 26% of the leukocytes plus immature red blood cells. In certain pathological conditions there was an increase in reticulocytes in relation to the immature cells, which in some reached 93%. Ascertaining the percentage of reticulocytes among the immature red blood cells in the bone marrow smears gives more precise information on the development of red blood cells than does

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The place of publication of the periodicals appears in brackets preceding each abstract.

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the determination of the percentage of reticulocytes among the mature red blood cells, because errors due to mixture with peripheral blood is avoided. The term reticulocytic bone marrow is suggested for the marrows in which most of the cells are reticulocytes.

Penicillotherapy of Cardiovascular Syphilis: A 7-Year Follow-up Study. D. Chand, B. M. Bharadwaj and G. Lal. Indian Heart J. **8**:143-162 (May) 1956 (In English) [Calcutta].

Of 60 patients (50 men and 10 women) between the ages of 26 and 68 years with cardiovascular syphilis, 41 were given a total dose of 4,800,000 units of penicillin in oil with 2% aluminium monostearate, divided equally over a period of 8 days. Treatment schedules adopted were either irregular or incomplete in the remaining 19 patients who, therefore, were excluded from the follow-up. Of the 41 patients 36 were followed up for 7 years. Eleven of the 36 died. Of the remaining 25, the general condition was improved in 11 and was unchanged in 14. The clinical cardiac status was stationary in 11 and became worse in 14. No decrease in the size of the heart or of the aorta was revealed by x-ray in 11 patients. Further increase in the size of the heart and further dilatation of the aorta or increase in the size of the existing aneurysm was revealed by x-ray in 14 patients. The tests of the serum of 4 patients changed from positive to negative, a drop in serum titer occurred in 14 patients, and the titer remained stationary in 7.

Although improvement in the general condition was maintained in 11 patients up to the end of the 7-year period, and, although some temporary improvement in cardiac findings occurred in some patients during the 1st year and was maintained in 2 in the 2nd year, about half of the patients showed a continued worsening up to the end of the follow-up period. The dosage of penicillin used in the treatment of these patients thus failed to arrest the progress of the syphilitic process in the aorta. No anaphylactic shock or Herxheimer's reaction was observed. A more effective therapeutic schedule is needed.

SURGERY

Fatal Hypertensive Crisis Following Denervation of the Carotid Sinus for the Relief of Repeated Attacks of Syncope: Case History. F. R. Ford. Bull. Johns Hopkins Hosp. **100**:14-16 (Jan.) 1957 [Baltimore].

In patients with carotid sinus syndrome, denervation of the sinus may cause a fatal hypertensive crisis. A 49-year-old man, who was seen in consultation in May, 1952, stated that in 1932 he had had some episodes with brief loss of consciousness. These were preceded by pain in the left ear. After about 3 years these attacks ceased, but in 1940 they returned and persisted thereafter. Stimulation of the left carotid sinus would induce the attacks. Atropine and other drugs were tried without result. The patient was advised not to wear a collar and not to turn his head suddenly, but there was no relief. The attacks became more frequent and more severe. Convulsive movements were seen during some. In May, 1952, the patient stated that in the preceding 12 months he had had 40 attacks of syncope. The blood pressure fell when pentothal was given to induce anesthesia. When the left carotid sinus was infiltrated with procaine, the blood pressure began to rise. The operation was nevertheless performed, and the left carotid artery was stripped of its sheath. At the end of the operation, which required 45 minutes, the blood pressure had reached 240/140 mm. Hg. No mass or other anatomic abnormality was found. After operation the patient failed to regain consciousness, and he died on the next day. Autopsy revealed some flattening of the convolutions of the cerebral cortex, a small pressure cone about the cerebellum, and signs of slight tentorial herniation. Hemorrhages were found in the cortex. It seems probable that the hemorrhages occurred when the blood pressure was at its height and were due not only to the hypertension but to changes in the cerebral vessels that could not sustain the high pressure.

While excitation of the carotid sinus reflex at operation may cause fatal cardiac arrest, the danger of sudden abolition of the carotid sinus reflex does not seem to be generally appreciated. Bucy pointed out that the carotid sinus mechanism gives rise to a constant flow of nervous impulses that have the effect of reducing the blood pressure and that sudden interruption of these impulses causes a transient hypertension before other mechanisms can gain control. It is possible that this hypertensive reaction may be avoided when roentgen irradiation is used because the reflex is reduced gradually. No doubt, the hypertensive reaction may be controlled at operation by the use of hypotensive drugs.

Invasive Fibrous Thyroiditis (Riedel's Struma). L. B. Woolner, W. M. McConahey and O. H. Beahrs. J. Clin. Endocrinol. **17**:201-220 (Feb.) 1957 [Springfield, Ill.].

Invasive fibrous thyroiditis (Riedel's struma) is an extremely rare clinicopathological entity. Prior to 1932, it was widely held that Riedel's struma was an end-stage of Hashimoto's disease, but Graham, in a careful review of the literature up to 1929, emphasized the striking differences between the 2 diseases and considered only 41 cases of Riedel's struma reported up to that time as authentic. A considerable number of reports on Riedel's struma deal in part or entirely with granulomatous (subacute) thyroiditis. The number of reported cases in which a strict definition of invasive fibrous thyroiditis is adhered to is extremely small. The authors made a study of 20 cases of invasive fibrous thyroiditis (Riedel's struma) observed at the Mayo Clinic in a 36-year period, during which approximately 42,000 thyroidectomies were performed. The presenting complaint of these patients was a hard lump in the neck, occasionally associated with a sense of pressure or dysphagia. Pathologically, the disease may be unilateral or bilateral, and extension into adjacent cervical structures is invariably present. A central adenoma, involutionary nodule, or cystic cavity was not a prominent feature in this series. The surgical treatment consists of wedge resection of the

isthmus when the disease is bilateral or subtotal resection of an involved lobe as a biopsy procedure when the disease is unilateral. The prognosis after wedge resection of the isthmus or subtotal removal of a fibrotic mass involving 1 lobe appears to be excellent.

A Series of Postoperative Infections. D. Sompolinsky, Z. Hermann, P. Oeding and others. J. Infect. Dis. **100**:1-11 (Jan.-Feb.) 1957 [Chicago].

Severe postoperative infections had been observed in 37% of all patients operated on from May, 1953, to February, 1955, in the Malben Hospital in Beer Yaacov, Israel. The infections occurred mostly after major operations on the chest, with prolonged exposure of tissue. All the infections were caused by Micrococcus (Staphylococcus) pyogenes var. aureus mostly of a single strain as determined by its phage sensitivity pattern, its serologic reactions, and its sensitivity to antibiotics. Forty-four persons were examined for presence of M. pyogenes var. aureus in the upper respiratory tract. Eight of 11 members of the operating room staff (73%), 20% of the staff of the medical wards, and 36% of the patients with micrococcic wounds yielded this organism. The source of the infections were 2 operating room nurses. The fact that these 2 persons were carriers of the same strain might be due to coincidence or a transmission from one to the other or from a patient. The path from the carrier to the patient is unknown. As long as the nurses were absent from the operating room, no postoperative infection occurred. At their return the infections recurred. The aseptic technique of the nurses has been improved by wearing double masks that properly cover the nose and by continuously wearing sterile gloves while in the operating room. After this precaution only 2 postoperative infections occurred, and they were not due to the micrococcic strain carried by these nurses.

Staphylococcal Hospital Infections. M. N. Levin. New England J. Med. **256**:155-158 (Jan. 24) 1957 [Boston].

Beginning in December, 1955, and continuing through February, 1956, there was an unprecedented number (17) of micrococcic (staphylococcic) infections on the general surgical service of the Veterans Administration Hospital, Manchester, N. H. Three of the victims were staff members. Of the remaining 14 patients, 3 had parotitis, 3 had wound infections, and 8 had furunculosis. These infections constituted 43.7% of all postoperative surgical complications for the period. Review of postoperative infections due to pyogenic micrococci since the hospital opened in 1950 reveals that this figure never previously exceeded 3%. Parotitis was particularly severe and resulted in the only death in this series (in a patient not operated on). Postoperative wound infections followed inguinal herniorrhaphy, lumbar sympathectomy, and ureteral lithotomy. Two required incision and drainage. Furunculosis materially delayed performing elective operations and significantly prolonged the postoperative hospital stay.

Cultures of throat and nares of all personnel concerned in handling surgical patients were performed. Only personnel in whom Micrococcus pyogenes var. aureus was shown to be pathogenic were relieved of duty on the surgical service. Blankets were autoclaved. Blankets, bed linen, nurses' uniforms, and floors were oiled. Masks covering the nose and mouth and sterile gloves were used while dressings were applied and during intravenous therapy and phlebotomy. Isolation technique was used when indicated in severe infections. This included private room care for all patients with infections. Unsterile blankets, soiled dressings, and casts were removed before the patient was wheeled into the operating room. The practice of taking the patient to the operating room in his ward bed was discontinued. Attention was given to preparing operative sites from the proposed incision outward. Proper operating-room dress for any person entering the operating room was insisted on. Opening and closing of operating-room doors during operation was reduced to the minimum. Nursing and lay personnel were instructed in the problem. Infections decreased greatly after these measures were taken. Adherence to principles of asepsis is mandatory.

NEUROLOGY & PSYCHIATRY

Anxiety as an Aid in the Prognostication of Impending Death. J. S. Beigler. A. M. A. Arch. Neurol. & Psychiat. **76**:171-177 (Feb.) 1957 [Chicago].

Beigler cites evidence from the literature to the effect that a somatic illness can sometimes be detected for the first time by such psychiatric manifestations as dreams, the course of psychotherapy or psychoanalysis, hysterical symptoms, and euphoria. There seems to be a profound need in the psyche to deny the presence of organic illness, especially if it is serious. Related to this denial of organic illness is the phenomenon described by Pfister among survivors of sudden, apparently inescapable, death situations, in which the subjects seemed to reassure themselves by scanning their lives rapidly for previous similar experiences that had been survived and imagining a pleasant future. These denials seem to be desperate escape measures from a traumatic situation. During 5 years as a liason psychiatrist on the medical wards, the author observed the anxiety mechanisms in operation, used the clinical evidence to make a prognosis of the organic illness, and, thereby, helped the internist in his management of the patient. The author shows that a physician managing a patient with severe physical illness may become anxious himself when the patient does not respond. His anxiety may be conveyed to the patient, who in turn may react adversely. If the physician is aware of the prognosis and the probable limitations of organic procedures, he can become more supportive in his attitude. The patient, knowing he is not alone, garners strength from the physician's kindness. There is, also, the advantage that, if the physician is alerted to the likelihood of impending death, he can advise the patient's family appropriately and help in the management of their problems.

GYNECOLOGY & OBSTETRICS

A Statistical Study on the Occurrence of Carcinoma of the Uterus Observed at the Clinic of Bari (Italy) from 1943 to 1955. S. Papadia and G. E. Nardone. Minerva ginec. 8:869-881 (Nov. 30) 1956 (In Italian) [Turin, Italy].

The authors report on a series of 11,415 gynecologic patients with malignant epithelial neoplasms. Carcinoma of the portio vaginalis was observed in 89.46% of the patients; of the cervical canal in 2.87%; and of the fundus in 7.67%. The number of patients between the ages of 40 and 69 years exceeded by far the number of patients in other age groups. The authors believe, however, that many aged patients with carcinoma of the uterus escape clinical observation. The age of the patient at the time of the onset of menstruation has no relationship to the location of the neoplasm. Parity, however, is a relevant factor; of the nulliparas in this series 6.31% had carcinoma of the portio vaginalis; 14.75%, of the cervical canal; and 34.36% of the fundus. A comparison of the results obtained in patients who had reached the menopause and those who still menstruated did not show any statistically significant differences.

Blighted Twin: (Report of Three Cases). W. F. Anderson. Canad. M. A. J. 76:216-218 (Feb. 1) 1957 [Toronto, Canada].

The term "blighted twin" is used when one member of a twin pregnancy dies and is retained in utero while the other develops to a viable birth. The amniotic fluid of the blighted twin is absorbed, and the fetus becomes dried out and flattened; this is known as a "fetus compressus" or, if the process is carried on to a further degree, as a "fetus papyraceus." The author presents the histories of 3 pregnancies with a blighted twin. The first case concerned a gravida 6 who expected confinement on Oct. 26. The pregnancy had been apparently normal until 7 a. m. Oct. 1, when she experienced mild uterine cramps. At 9:30 a. m., she passed a macerated male fetus of about 4 months' development. The umbilical cord was wound tightly around the baby's neck, and this was probably the cause of death. Examination showed the presence in the uterus of another fetus with normal heart sounds. About noon the mother began to have active labor and at 2:30 p. m. delivered a premature male infant. There was a double placenta. One placenta appeared normal. The other was white, hard, and fibrotic. It apparently had been inactive for several months and had become completely fibrosed.

The second woman was admitted in active labor. The spontaneously delivered baby was a normal female infant. After a few minutes the placenta was presented, and it was followed by a small macerated fetus still enclosed in its amniotic sac. The third woman delivered a premature female infant spontaneously. A few minutes after the birth of the baby, the placenta appeared to be coming away, but when it was expelled it was found to be not the placenta of the first baby but a separate placenta with the sac intact containing a small macerated fetus that appeared to be of about 3 months' development. Most of the maternal surface of this placenta was covered with areas of infarction. A few minutes later the normal placenta of the first fetus was expelled. Investigators have noted episodes of vaginal bleeding, acute illness, sudden lower abdominal pain, or escape of amniotic fluid coincident with the estimated time of fetal death in multiple pregnancy. The presentation of a fetus papyraceus in front of the viable twin may confuse diagnosis during labor. Twin pregnancy should be suspected in cases of hydramnios, and spontaneous disappearance of hydramnios may be due to death of one fetus, as in the second of the reported cases. Rapid improvement in toxemia may also be due to death of 1 twin, since the death of 1 twin and absorption of amniotic fluid reduces the intrauterine pressure and alleviates the placental anoxia.

Malignant Lymphoma as a Gynecologic Problem: Report of 5 Cases Including 1 Primary Lymphosarcoma of the Cervix Uteri. C. E. Johnson and E. H. Soule. Obst. & Gynec. 9:149-157 (Feb.) 1957 [New York].

The authors describe 5 cases of malignant lymphoma in women between 40 and 67 years of age in whom involvement of the uterus and vagina was the primary manifestation. The first patient was admitted to hospital because of profuse, foul-smelling, nonirritating vaginal discharge and pelvic pressure of 2 weeks' duration. Metrorrhagia occurred for the first time 2 days before admission. The cervix was enlarged to 3 or 4 times its normal size. The posterior lip felt indurated, and a superficial type of erosion was present. Tenderness and thickening were felt in the left adnexal region but no definite mass was palpated. The hemoglobin level was 13 Gm. per 100 cc., and the erythrocytes numbered 4,490,000 and the leukocytes 7,700 per cubic millimeter. The differential count revealed 93.5% neutrophils, 4.5% lymphocytes, and 2% monocytes. The sedimentation rate was 23 mm. in 1 hour. A smear from the cervix was negative for malignant cells. Cervical biopsy and endometrial curettage revealed lymphosarcoma. Treatment consisted of radium and x-ray therapy. There was no objective evidence of recurrent disease for nearly 4 years. Microscopic examination of the tissue removed from the cervix revealed that the cervical stroma was completely replaced by a dense infiltrate of anaplastic cells. The surface epithelium was intact, and the endocervical glands were surrounded and widely separated. The bulk of the cellular infiltrate was composed of moderately large, anaplastic cells with large, hyperchromatic nuclei that were surrounded by a narrow zone of cytoplasm. The nuclei were prominent, and mitotic figures were easily observed. Small clusters of semimature lymphocytes were scattered throughout the stromal infiltrate. A diagnosis of primary lymphosarcoma of the cervix uteri and endometrium was made.

The presenting complaints were also primarily gynecologic in the 4 other patients. A diagnosis in 3 patients of generalized lymphosarcoma of lymphocytic type, generalized reticulum-cell sarcoma, and generalized lymphosarcoma of lymphoblastic type, respectively, with secondary involvement of the uterus and

vagina, was made. In 1 a diagnosis of chronic lymphocytic leukemia with leukemic infiltration of the endometrial stroma was made. The fact that these patients sought medical advice primarly because of gynecologic complaints makes it apparent that the gynecologist may be the first physician called on to examine such a patient. A review of the literature revealed that malignant lymphoma, a systemic disease, seldom manifests itself as primary disease of the pelvis.

Treatment of Mammary Engorgement with Posterior Pituitary Extracts. A. Massano. Minerva ginec. **8**:934-936 (Dec. 15) 1956 (In Italian) [Turin, Italy].

Hypodermic injections of 5 to 10 Voegtlin units of oxytocin and of oxytocin with hyaluronidase (12 to 25 Voegtlin units) had a beneficial effect on 250 women with mammary engorgement, most of whom were pluriparas. All patients had pain, feeling of tension, and increase in turgor in one or both breasts. The skin of the breast at the beginning was normal but later became shiny and bluish. Milk was extracted from the breast within 20 minutes after the injection. Violent contractions of the uterus with loss of blood were the only significant side-effect, but this occurred mainly among the pluriparas, and it was checked with antispastic substances. The small quantity of hormone that gets into the milk is not harmful to the child. One injection is capable of checking engorgement if it is detected early. Half of the patients treated by the author received 2 injections, and only 25 patients received 3 injections. The hormone does not have any effect on the milk-producing mechanism but only on the flow of the milk from the breast. Constant and prolonged treatment of some patients with hypogalactia showed that oxytocin has a lactogenic effect only when there is already abundant production of milk. The hormone reduced to a minimum the occurrence of mastitis because, by reducing the stasis and reactivating the circulation, it facilitated the keeping away of germs and stimulated the local defense mechanism. Sepsis caused by the engorgement was present in a few patients only. The use of hyaluronidase permits reduction of the dosage of hormone needed for each patient and reduces the time necessary for the effect of the hormone to manifest itself.

PEDIATRICS

A Follow-up Study of Children Treated for Acute Purulent Meningitis. C. G. Bergstrand, T. Fahlén and A. Thilén. Acta pædiat. **46**:10-17 (Jan.) 1957 (In English) [Uppsala, Sweden].

Although the mortality of pyogenic meningitis has been greatly reduced since the introduction of sulfonamides and antibiotics, the extent to which sequelae develop represents a new problem. This report is concerned with the late results of treatment of pyogenic meningitis in 92 children observed in 2 Stockholm hospitals during the 8-year period from 1947 to 1954. Seven of these children had died. Information was obtained on 77 of the surviving children. Fourteen of these had shown more or less severe defects at the time of discharge from the hospital. On follow-up examination 15 patients, 9 of whom had had influenzal meningitis, showed sequelae. The sequelae were mostly severe. Five patients had mental retardation; 2 had hydrocephalus; 4, and perhaps 1 other, had convulsions; 7 had paresis; 3 had ataxia; 5 had deafness; and 5 had vestibular damage; some had more than one defect.

The patients were divided into 2 groups, with regard to whether or not streptomycin was used. Of 40 treated with streptomycin 1 died, 9 had defects, and 4 had vestibular damage. Of 45 who did not receive streptomycin 6 died, 5 had defects, and 2 had vestibular damage. Of 6 patients who had been treated with streptomycin and were found to have impaired vestibular function at the time of discharge from the hospital, 3 still had it at the follow-up examination. The vestibular lesion was unilateral in 1 of those with persisting damage, and it is assumed that in this patient the vestibular lesion was not caused by streptomycin but was a complication of the meningitis. Impaired vestibular function at the time of discharge from the hospital but not at the follow-up was noted also in 1 patient who had not received streptomycin. Thus, it seems that vestibular damage may result from pyogenic meningitis itself and that in some cases at least this damage is reversible.

Acute Leukemia During Childhood: Incidence, Erroneous Diagnoses, Predisposition, and Treatment. J. Oehme. Deutsche med. Wchnschr. **82**:110-113 (Jan. 18) 1957 (In German) [Stuttgart, Germany].

At the children's clinic of the University of Leipzig more than twice as many children with leukemia were treated during the 4 years from 1951 to 1954 as during the 4 years from 1947 to 1950, although the total number of admissions remained the same. Childhood leukemia is frequently mistaken for other disorders. Of 98 children with acute leukemia treated between 1944 and 1955, 70 were hospitalized with an erroneous diagnosis. The list of erroneous diagnoses shows that the fact is not recognized sufficiently that in leukemia all 3 types of blood cells may be reduced in number. Leukemia was not recognized in 24 children because a hemorrhagic tendency or anemia dominated the symptomatology. The joints may be involved in leukemia. In view of the additional anemia and cardiac murmur, a mistaken diagnosis of rheumatic fever or of endocarditis is understandable, but, whereas even in early leukemia the thrombocytes show a decrease, rheumatic fever is not accompanied by thrombopenia. That leukemia may be mistaken for infectious mononucleosis is understandable in view of the protean manifestations of both diseases, but here again the difference in the thrombocyte count is important. The mistaken diagnosis of mumps would be more readily avoidable if it were remembered that tumors may develop in leukemia.

The erroneous diagnosis of toxic scarlet fever is not readily explainable, although cases have been observed in which the leukemia was preceded by an attack of scarlet fever, and rubeoloform exanthems and maculopapular efflorescences have been observed in patients

with leukemia. That 6 of the children with leukemia were hospitalized with a diagnosis of gastrointestinal disorders is understandable when it is considered that the digestive tract can be involved in acute leukemia. This abdominal form of leukemia can be recognized by roentgenologic examination. The erroneous diagnosis of Hodgkin's disease is possible in the mediastinal form of leukemia, which often exists for a long time without leukemic blood changes, even without the early thrombopenia. Sternal puncture is the decisive diagnostic aid in these cases. While a leukemia that at the onset presents the aspects of a panmyelophthisis may lead to a mistaken diagnosis, particularly in adults, it should be remembered that in children leukemia should be thought of first whenever there is a reduction of all 3 blood elements.

The aleukemic form of leukemia (leukocyte count of less than 10,000 per cubic millimeter) is twice as frequent in children as in adults, and the author believes that this may explain why the diagnosis of leukemia is frequently missed. Of 85 children with acute leukemia, 5 were infants, 42 were of preschool age, and 38 were of school age. In the treatment of leukemia the author uses hormones, antimetabolites, and blood transfusions. He refrains from the use of antibiotics, because they have no effect on the basic disorder and their administration involves the danger of the development of mycotic infections. He begins treatment with corticotropin and later uses cortisone. He believes that the antagonists of folic acid are more toxic than those of the purines. Of the available antimetabolites, amethopterin is less toxic than aminopterin. Generous use is made of blood transfusions because they have not only a substitutional but also an antileukemic effect.

Early Diagnosis of Congenital Obstruction of Small Intestine. C.-A. Sager. Medizinische No. 3, pp. 108-110 (Jan. 19) 1957 (In German) [Stuttgart, Germany].

Seven newborn infants with congenital obstruction of the small intestine were admitted to a pediatric clinic in the course of 18 months. Early recognition of the condition was based on the observation of 3 symptoms that did not prove the presence of congenital obstruction but that caused it to be suspected. They consisted of vomiting during the first days of life, absence or scanty discharge of meconium, and hydramnios of the mother. Vomiting occurred on the 2nd day of life after the 1st mixed meals. If the vomitus contained bile, the search for the obstruction was made below the duodenal papilla, in the area of the deeper portions of the small intestine. If the vomitus was mucous and gave an acid reaction, the seat of the obstruction was considered to be suprapapillar. Although vomiting usually was the predominant symptom, it was absent in 1 patient with obstruction of the pylorus. The mothers of all 7 infants had hydramnios. Congenital malformation of the small intestine in 1 infant was suspected only on the basis of the hydramnios of the mother and the prematurity of the infant.

In the presence of these suggestive symptoms, diagnostic methods should include examination of the gastric contents, occasionally the Farber test, and, most important, x-ray examination of the gastrointestinal tract with the aid of a contrast medium. Differential diagnosis of spasm from genuine obstruction can be made with the aid of the atropine test. Passage of the contrast medium may be observed in case of spasm after the administration of 0.1 mg. of atropine, which may be repeated up to 5 times. Operation on the infant in whom the suspicion of congenital obstruction of the small intestine has been confirmed should be performed before the metabolism of the infant has been impaired. Four of the 7 infants survived the operation without notable disturbance. The other 3 died, 2 of them because of other congenital malformations (atresia of the common bile duct and of the mesentery), and 1 of aspiration pneumonia. Close cooperation between an experienced surgeon interested in pediatric problems and the pediatrician is essential.

Salmonella Osteomyelitis Complicating Sickle Cell Disease. J. G. Hughes and D. S. Carroll. Pediatrics 19:184-191 (Feb.) 1957 [Springfield, Ill.].

Thirty-one of 130 children with osteomyelitis who were admitted to the hospital were white, and 99 were Negroes. Nine of the 99 also had sickle cell disease. The general incidence of sickle cell disease is much lower than that in this group. The ages of the patients ranged from 2 to4 years. Cultures were obtained from 8 of the 9 children with sickle cell disease complicated by osteomyelitis, and the causative agent was identified in 6. It was hemolytic Micrococcus (Staphylococcus) pyogenes var. aureus in 2, Salmonella typhimurium in 1, Sal. schottmuelleri in 2, and an undetermined type of Salmonella in 1. Salmonella organisms were not cultured from any of the other 121 children who had osteomyelitis without sickle cell disease, but they were present in 4 of the 9 children with sickle cell disease complicated by osteomyelitis. The fact that half of the patients from whom cultures were obtained had proved Salmonella infection suggests that there is more than a chance relationship between the presence of these organisms and osteomyelitis in patients with sickle cell disease. Four additional cases of Salmonella osteomyelitis complicating sickle cell disease were collected from the literature; 2 occurred in children less than 3 years of age and 2 in 14-year-old children. The fact that 6 of the 8 children with this combination of diseases were between the ages of 1 and 4 years suggests that it occurs chiefly in young children.

Roentgenograms of the affected bones showed a characteristic appearance, with irregular destructive areas, periosteal proliferation, cortical fissuring, and pathological fractures in some patients. Osteomyelitis should be considered as a possibility in children with sickle cell disease who have pain or swelling in one or more extremities or who seem unusually irritable when moved. The fact that these manifestations are usually caused by vascular thromboses, an inherent aspect of sickle cell disease, should not blind the clinician to the possibility of bone infection. Cultures of the blood and stool should be obtained. If pathogenic bacteria are isolated, their antibiotic vulnerability should be determined. Chloramphenicol and erythro-

mycin would appear to be the logical combination of antibiotics, since Salmonella organisms and hemolytic Micrococci are the chief organisms so far reported to cause osteomyelitis in children with sickle cell disease. Although chloramphenicol is generally the most effective antibiotic in Salmonella osteomyelitis, it is difficult to eradicate completely the offending agent. Perhaps this is partly due to the extensiveness of the pathological process, with involvement of many bones. It may be more difficult to achieve high concentrations of the antibiotic in the infected areas because of repeated thrombosis of vessels in the bones.

Contribution to the Study of the Relationship of the Electroencephalogram and the Disturbances of Character and Behavior in Children: 600 Cases. G. Heuyer, I. Nekhorochef and G. Lelord. Semaine hôp. Paris 33:211-220 (Jan. 20) 1957 (In French) [Paris].

The electroencephalograms of 600 children between the ages of 5 and 7 years who were hospitalized for "primary" disturbances of character and behavior without mental impairment and without notable history were studied. Abnormal electrocardiographic tracings according to the criteria adopted by Lindsley, Henry, and Walter were observed in more than 30% of the children studied. The abnormalities consisted of dysrhythmias of a paroxysmal type in 8% of the patients, of pronounced dysrhythmias of a slow-wave type in 16%, of dysrhythmias of either a paroxysmal or slow-wave type elicited exclusively by intermittent light stimulation or by hyperpnea in 5% of the patients, and of various abnormalities in 1% of the patients. It was not possible to establish a definite relationship of certain clinical features, such as paroxysmal character of the disturbances, antisocial behavior, and anxiety as a predominant symptom, with certain electroencephalographic patterns.

Abnormal electroencephalograms showing dysrhythmias of a paroxysmal type are usually observed in patients with epilepsy, but the observations in these children showed that the presence of such a tracing is not sufficiently specific to warrant placing the child in an institution for epileptics. If the clinical examination does not furnish any evidence of epilepsy, such as infantile convulsions, disturbances of consciousness, or incomplete remembrance of an action for which the child is charged, the child should be place in an institution for children with disorders of character rather than in one for epileptics. The authors caution against too hasty a pathological interpretation of encephalographic tracings of a slow-wave type, since such tracings have little specificity in children; slow waves may be elicited by undue emotion, hunger, and sleep and particularly during the initial phases of the process of physiological maturation.

The abnormal electroencephalographic tracings may, however, serve as an indication for treatment. Barbiturates should be given a trial in children with dysrhythmias of a paroxysmal type; and, in case of therapeutic failure, hydantoin derivatives and, if necessary phenylacetylurea derivatives should be used. Bromides may be added. Barbiturates seem to be ineffective in children with dysrhythmias of a slow-wave type; treatment should be started with hydantoin derivatives, and phenylacetylurea derivatives may be used occasionally. The empirical character of the electroencephalogram from the therapeutic point of view is stressed; the essential criterion lies in the clinical course.

The Problem of Keeping Premature Infants Warm or Cold. H.-W. Kintzel. Arch. Kinderh. 154:238-247 (No. 3) 1957 (In German) [Stuttgart, Germany].

Cooling has been regarded as a factor in the mortality of premature infants. It has been demonstrated in several statistical reports that the death rate is much higher in premature infants whose body temperature is below normal than in those in whom it is normal at the time they are admitted to the hospital. At the author's hospital the comparative rates were 47 and 18%. The higher mortality of those with low temperatures is evident even if premature infants with intracranial hemorrhages and with other organic lesions are excluded. Whereas it was long accepted that the premature infants should be warmed up to 37 C (98.6 F) as soon as possible, it has recently been questioned whether this produced the best results. Joppich, for instance, advised that these infants be left to depend on their own heat regulating mechanism and that external heat (hot water bag) should be applied only if the body temperature fell to below 32 C (89.6 F). Tobler also reported favorable results with very gradual warming. Other investigators advocated not only that the body temperature of the infants not be increased, but that cooling be deliberately induced in the hope of reducing the high mortality.

In order to obtain more definite information on the advisability of hypothermia in the prematurely born, the author studied premature infants who were kept at temperatures at which they were born rather than warmed rapidly. It is pointed out that the problem in adults is different from that in premature infants because of the functional inefficiency of their heat regulating center. The author advises keeping premature infants weighing under 2,000 Gm. (4 lb. 6 oz.) at a low temperature if they are admitted with a low temperature, but this treatment seems to be of little advantage in premature infants of higher weight. The author does not favor inducing low temperatures, even under careful supervision.

DERMATOLOGY

The Effect of Hydrocortisone on Standardized Skin-Surface Trauma. G. C. Wells. Brit. J. Dermat. 69:11-18 (Jan.) 1957 [London].

If cellophane tape is applied to the skin surface and then sharply pulled off, a fairly even spread of squames is found adhering to the gummed tape. Presumably removal of nearly all the scales from the surface might increase the permeability of the epidermis, and the

author thought that this damage and repair stimulus might lend itself to a study of the local action of hydrocortisone. A flat area of normal skin with uniform surface is chosen (usually the flexor aspect of the forearm), and ½-in.-wide cellophane tape is smoothed on to the skin for a length of about 8 cm. It is then sharply stripped off. A fresh piece is applied to the same area and again it is immediately stripped off. This process is repeated until, after about 30 pulls, glistening macules appear on the skin surface, which with further stripping become confluent. There is then an even pinkish-red surface that is glistening but not moist. At this stage the stripping becomes painful and any further attempts will result in excessive local damage with surface edema and an axon-reflex flare at the edges of the strip. Erythema persists in the strip for several days. After about 48 hours the redness begins to fade; thereafter, the damaged surface becomes scaly, and during the next week or two parakeratotic scales separate until normal compact keratin has been restored.

Immediately after stripping the damaged area is divided into 2 or more parts; 1 part is treated with the control, an unmedicated vehicle, and the other parts with hydrocortisone or other local applications. Applications are made 3 times in 24 hours. Dressings are applied to prevent friction of clothing. Application of hydrocortisone after stripping is followed by inhibition of vasodilatation, first apparent at about 4 hours and maximal at 12 hours. Erythema returns some hours after stopping hydrocortisone applications. Direct comparisons between 1 or more different applications can be made on the same strip. Ointments containing a 2% solution of glycyrrhetinic acid had none of the vascular effect of hydrocortisone. Paired biopsy specimens from the same strip showed less accumulation of perivascular small round cells in the hydrocortisone-treated areas than in the controls.

UROLOGY

Urinary Tract Infection in a Male Urologic Ward with Special Reference to the Mode of Infection. A. A. C. Dutton and M. Ralston. Lancet **1**:115-119 (Jan. 19) 1957 [London].

During routine examination of urine from male urologic patients, infection was found to be frequent. Studies were made on 80 unselected patients—35 with benign prostatic hyperplasia, 7 with carcinoma of the prostate, 10 with other urinary-tract neoplasms, 9 with urinary-tract calculi, and 19 with miscellaneous urologic conditions. Of 35 patients with benign prostatic hyperplasia, 22 became infected in the hospital. Of the remaining 45 patients with various urological conditions, 13 became infected in the hospital. Evidences of autoinfection from the patient's intestine and cross infection were sought. There was little evidence of autoinfection. Samples of feces from 41 patients were examined quantitatively for urinary organisms, excluding streptococci, using mediums containing streptomycin, since nearly all the infecting strains were streptomycin-resistant. No urinary infecting organisms were isolated from any samples from 23 of 29 patients infected with streptomycin-resistant organisms or from the 12 other patients investigated. The possibility remains of occasional cases of autoinfection.

There was conclusive evidence of cross infection in a high proportion of the patients. Of 58 infected patients 38 were infected by strains of organisms recovered also from other patients. The numbers of patients infected by the predominant strain of each species were Micrococcus (Staphylococcus) pyogenes 11, Escherichia freudii 4, Klebsiella 7, Providence group 17, and an indole-negative strain of Proteus vulgaris 14; and strains of Proteus mirabilis in 8 of 11 patients were of the same type. The drug sensitivity was characteristic of that found in hospital infections. Resistant strains were isolated from patients who had been infected after admission but before any chemotherapy was given. In contrast, strains of Esch. coli recovered from patients already infected at admission were sensitive and were all of different serologic types. A number of potential sources of cross infection were investigated and yielded one or more urinary-tract infecting strains; these sources were Winchester bottles used for collecting urine from patients with indwelling catheters, urinals, nurses' ward hand towels, nurses' hands, fluids from bladder-irrigation syringes immediately before use, air, and dust. Boilable catheters and cystoscopes gave negative results. Mock bladder-drainage systems were set up in the laboratory, and both M. pyogenes and Streptococcus fæcalis (but not gram-negative bacilli) survived the routine chemical disinfection given to Winchester bottles and ascended from these along sterile tubing to the "bladder" against a flow of sterile urine.

THERAPEUTICS

Antibiotic Combinations: Antistreptococcal and Antistaphylococcal Activity of Plasma of Normal Subjects After Oral Doses of Penicillin, Oleandomycin and Combinations of These Antibiotics. W. F. Jones Jr. and M. Finland. New England J. Med. **256**:115-119 (Jan. 17) 1957 [Boston].

In a previous article the authors presented results of measurements of the antistreptococcic and antimicrococcic (antistaphylococcic) activity of plasma of normal subjects after the ingestion of erythromycin, penicillin, or both. Analysis of the findings indicated that there were differences in the absorption of the various dosage forms. These and the previously demonstrated differences in activity of penicillins V and G given by mouth could account for most of the differences in activity observed when these preparations were used singly or in combination. The present article deals with similar observations on another combination of antibiotics—namely, that of a new antibiotic, oleandomycin, and penicillin G (offered as an oleandomycin salt of penicillin G, with or without additional penicillin). Normal young men were given the test doses by mouth before breakfast in random rotation so that the different dosages were given on

each test day to different subjects and each subject received a dose of each of the individual agents and of the combinations on different days, with at least 3 days between doses. Samples of citrated plasma from venous blood, obtained before and, at appropriate intervals, after the doses, were kept frozen at –20 C until used, and those from each day were tested with appropriate controls at the same time with each test organism.

The following antibiotics were used: potassium penicillin G tablets, each containing 125 mg. (200,000 units) buffered with 120 mg. of calcium carbonate; oleandomycin phosphate capsules, each containing 250 mg.; oleandomycin salt of penicillin G, unbuffered (compound AP) in capsules, each containing 250 mg. of the crystalline compound, of which two-thirds was oleandomycin and one-third penicillin G; and buffered compound APG in tablets, each containing 180 mg. of compound AP and 120 mg. (200,000 units) of potassium penicillin G, with sodium citrate. These tablets, therefore, contained 2 parts of oleandomycin to 3 parts of penicillin G. The test strains used in the assays for antibacterial activity of the plasma included the standard strains Streptococcus 98 and Micrococcus (Staphylococcus) 209P, which had been used in previous studies, 2 strains of Micrococcus pyogenes var. aureus, no. 235 and 400, and a smooth, encapsulated strain of type 3 pneumococcus recently isolated from a patient. The tests for antibacterial activity of plasma were carried out by a twofold-dilution technique in brain-heart infusion broth. Penicillin produced the highest peak values and the greatest total amount of activity in the blood against penicillin-sensitive strains. Oleandomycin was the least active, although with a large single dose the activity was slightly more prolonged than that of a similar amount of penicillin in some of the subjects. The combinations of penicillin with oleandomycin always gave intermediate values. No enhanced activity of any of the combinations of oleandomycin and penicillin was demonstrable. Any combination of oleandomycin with penicillin can therefore be expected to be active only to the extent that the infecting organism is still susceptible to each of these agents.

Prednisolone-Hydroxyzine Combination in Rheumatoid Arthritis. P. J. Warter. J. M. Soc. New Jersey 54:7-10 (Jan.) 1957 [Trenton, N. J.].

The large doses of prednisolone sometimes needed in rheumatoid arthritis increased the adverse effects of the steroid therapy, and so it seemed advisable to reduce the dose of steroids by combining them with other therapeutic agents. The correlation between anxiety states and rheumatoid exacerbations suggested that an ataraxic agent might potentiate the action of steroids or provide relief for the emotional components of rheumatoid arthritis. Hydroxyzine hydrochloride, a piperazine derivative with ataraxic effects, was combined with prednisolone. Ataraxoid tablets containing 5 mg. of prednisolone and 10 mg. of hydroxyzine were used in this study on 6 men and 15 women, who had shown signs of rheumatoid arthritis for from 18 months to 20 years. All had been under the care of the investigator for 18 months, and most of them had been receiving prednisone, prednisolone, or cortisone. By using the combination of prednisolone and hydroxyzine it was possible to reduce substantially the maintenance dose of prednisolone in 12 of 21 patients, without sacrificing therapeutic effect in any case and with continued improvement in most of the patients. Clinical improvement, reduction of steroid dosage, or both was achieved in 18 of the 21 patients, and steroid side-effects were generally diminished in intensity. A tranquilizing effect without drowsiness was produced in most patients, and in many it proved possible to gain active cooperation in the management of the disease for the first time.

PATHOLOGY

Chronic (Healed) Dissecting Aneurysms. J. T. Prior, R. T. Buran and T. Perl. J. Thoracic Surg. 33:213-228 (Feb.) 1957 [St. Louis].

The authors describe the clinical and pathological characteristics of 5 fatal cases of chronic, so-called healed, dissecting aneurysm of the aorta in 3 men and 2 women between the ages of 38 and 87 years on whom autopsies were performed. Survival time in these patients ranged from 63 days to 6 years. The 5 deaths resulted from acute dissection of the aorta into the pericardial space, chronic rheumatic heart disease with cardiac failure, congestive heart failure, aortic rupture into the left pleural space, and carcinoma of the stomach with metastases respectively. The weight of the heart varied from 345 to 780 Gm. Heart failure, the most common cause of death in patients with dissecting aneurysm, often occurs in a manner comparable to that associated with coarctation of the aorta, the intramural hemorrhage producing extreme narrowing of the original aortic lumen. A history of excruciating epigastric or precordial pain associated with atypical patterns of radiation strongly suggests dissecting aneurysm. Clinical evidence of shock in the presence of sustained hypertension is usually present. Paresthesias and alterations in the circulation of the extremities are not uncommon. The most useful diagnostic aid is a roentgenogram of the thorax. Although the involved portion of the aorta is widened, it is of such a nature as to produce a straightening of the aortic curve in the involved segment. This straightened wall shows numerous irregularities caused by large collections of intramural blood clots at these sites. The widened segment swings back to the mediastinum at an angle and not in a curve, as with the syphilitic aneurysm.

The pathological changes varied from imperfectly organized intramural hematomas to secondary endothelium-lined channels (double-barrel aortas) with abundant elastification and pronounced intimal and subintimal proliferative changes. Additional interest in the small proportion of cases of this type of aneurysm is produced because of the great advances in the field of cariovascular surgery. The rationale of surgi-

cal repair of dissecting aneurysm, a condition previously considered to be hopeless, is based on the principle that reentry of the dissected passage at some distal point in the aorta permits restoration of peripheral circulation and removes the increasing tension on the outer wall that predisposes to rupture.

Anterior Pituitary Glands in Patients Treated with Cortisone and Corticotropin. R. A. Kilby, W. A. Bennett and R. G. Sprague. Am. J. Path. **33**:155-169 (Jan.-Feb.) 1957 [Ann Arbor, Mich.].

Kilby and co-workers point out that Crooke in 1935 made a notable contribution to knowledge of the pathology of Cushing's syndrome when he described a characteristic alteration in the cytoplasm of the pituitary basophil cells. In each of his 12 patients he observed a replacement of the basophilic granules by a homogeneous substance of similar staining qualities, a process that he termed hyaline change. This phenomenon received early confirmation and is now acknowledged generally as a constant finding in Cushing's disease. Crooke believed that this hyaline change represents "an expression of altered physiological activity" and concluded that it is "the alteration of fundamental significance in the causation of the syndrome." Other investigators, particularly Bauer, Albright, and Kepler, criticized the hypothesis of the pituitary origin of the syndrome and suggested that the hyaline changes could be a result rather than the cause of certain hyperadrenal states. The etiology of Cushing's syndrome has not been fully explained as yet, but the widespread use of corticotropin and of cortisone in nonendocrine diseases has resulted in the production of hyperadrenal states indistinguishable from spontaneous Cushing's syndrome. The occurrence of hyaline changes in the pituitary basophils of these hormone-treated patients would be telling evidence against the hypothesis that such changes are indicative of pituitary hyperfunction. The authors examined the adenohypophyses of 76 patients who had received varying amounts of cortisone, corticotropin, or both substances prior to death from various unrelated diseases.

The significant histological alterations in the pituitary bodies of these hormone-treated patients were confined to the basophil cells, which, in addition to nuclear and nucleolar hypertrophy, showed varying degrees of cytoplasmic degranulation. This colloid or prehyaline change remained intensely basophilic and presented a less homogeneous appearance than the lighter-staining hyaline material that ultimately formed. In general, there was a direct correlation between the degree of alteration of the basophils and the duration and amount of hormone therapy. Although degranulated basophils represented the predominant change in the hormone-treated patients, there were also completely hyalinized basophils that were almost indistinguishable from the Crooke cell of Cushing's syndrome. The authors believe that there is much evidence to support the hypothesis that Crooke's hyaline change in Cushing's syndrome is secondary to adrenocortical hyperfunction. They further conclude that the question of the cellular origin of corticotropin remains unsettled. The biochemical identification of the hyaline material may be important in the study of the pathogenesis of hyperadrenocortical disorders.

Five Cases of an Undescribed Form of Pulmonary Interstitial Fibrosis Caused by Obstruction of the Pulmonary Veins. E. C. Andrews Jr. Bull. Johns Hopkins Hosp. **100**:28-42 (Jan.) 1957 [Baltimore].

Five patients with an unusual form of pulmonary interstitial fibrosis were observed on the department of pathology of the Johns Hopkins University in the course of 2 years. Partial or, perhaps, intermittent obstruction of one or more pulmonary veins were observed in all of them. With one possible exception, the literature revealed no other reports on this condition. The clinical course and the autopsy findings in the 5 cases demonstrate that obstruction to the outflow of a pulmonary vein can cause a severe and in some respects an unusual form of interstitial fibrosis in the lung parenchyma that it drains. The venous obstruction that resulted in interstitial fibrosis was produced by a variety of causes. In case 1 the free flow of blood from the pulmonary veins into the left auricle was obstructed by a large myxoma; in case 2 a similar obstruction resulted from a large auricular thrombus; in cases 3 and 5 pulmonary veins were constricted by the dense collagen of mediastinal collagenosis; and, in case 4 there was congenital stenosis of pulmonary veins. In its most fully developed form the interstitial fibrosis resulting from pulmonary vein obstruction is in no way different from certain others, especially the late stages of the "acute diffuse interstitial fibrosis" described by Hamman and Rich. It is only in its earlier developmental stages that this process appears unusual. This fact was appreciated only in retrospect.

It is difficult, if not impossible, from the material at hand to outline the characteristic clinical findings for this pathological entity. In the 1st and 2nd cases these findings were dominated by the underlying disease, which secondarily led to the obstruction of the pulmonary veins. In the 4th case the findings were primarily those resulting from the cardiac malformation. Thus, there remain only the 3rd and 5th cases, which, at least in retrospect, manifested themselves chiefly by the results of pulmonary vein obstruction. In these 2 cases there was dyspnea, cough, and repeated hemoptysis. Hemoptysis and dyspnea also occurred in case 2. Thus it appears that pulmonary vein obstruction should be considered in any obscure illness with dyspnea, cough, and repeated hemoptysis, particularly if the right side of the heart is enlarged and also if the duration of these symptoms would tend to rule out pulmonary carcinoma and if mitral stenosis or severe failure of the left side of the heart appears unlikely. In view of the severity of the lesions at autopsy in the cases presented, it is surprising that roentgenograms of the lungs revealed evidence of parenchymal pulmonary disease other than nonspecific signs of congestion only in cases 1 and 3. The reasons for this incomplete correlation between the roentgenograms and the severity of the lesions are not entirely clear and must await further study.

RADIOLOGY

Cholecystography with New Contrast Mediums. E. Mantero. Minerva chir. 11:1185-1192 (Dec. 15) 1956 (In Italian) [Turin, Italy].

The author reports on a series of 500 cholecystographies made with triiodates, biiodates, and a 20% solution in water of the sodium salt of N-N-adipin-di-(3-amino-2,4,6-triiodobenzoic) acid (Biligraphin). The molecular weight of Biligraphin is 1,183.85. It contains 64.32% of iodine and is given intravenously. Its molecule contains 6 atoms of iodine. In patients with hepatic insufficiency it can be eliminated through the kidney. The patients were divided into a group of 100 patients, some of them with hepatitis, and a group of 400 patients, 300 with hepatitis and 100 with other diseases. Special attention was paid to the bile ducts on the cholecystography of the patients of the 2nd group. Comparative examinations were made in all patients 3 days after the previous examination. Biligraphin gave the highest percentage of contrasts of the gallbladder and bile ducts and showed the largest number of stones. Triiodates had a marked contrast effect but not as good as that of Biligraphin. The tolerance of Biligraphin and triiodates was the same. Biiodates did not give as good contrast as the other substances and caused more gastrointestinal distress. Two injections of 20 cc. of Biligraphin at an interval of 20 minutes gave the best results. A double dose (6 Gm.) of triiodates gave the same results as a single dose (3 Gm.).

A Quantitative Study of the Radiosensitivity of Chronic Leukemia. E. C. Easson. Brit. J. Radiol. 30:35-39 (Jan.) 1957 [London].

The white blood cell count falls exponentially with integral body dosage of radioactive phosphorus (P^{32}). By plotting a graph of the logarithm of the leukocyte count each day against the accumulated dose from the P^{32} on each day, a straight line is obtained, the slope of which differs from one patient to another. The slope of the graph, expressing the rate of fall of the white blood cell count in response to each millicurie used, is an index of the sensitivity of the leukopoietic tissue for that patient. The integral body dose of P^{32} that will depress the white blood cell count to 50% of its pretreatment level (half-value dose) is a convenient method for expressing the slope of the graph. The half-value dose expressed in millicuries destroyed is a quantitative expression of each patient's leukocyte sensitivity. The half-value dose was tabulated for 27 patients with chronic granulocytic leukemia and for 21 patients with chronic lymphocytic leukemia in order of decreasing leukopoietic sensitivity. Eight of the 27 patients were male and 19 were female; their ages ranged from 12 to 74 years. Four of the 21 patients were women and 17 were men; their ages ranged from 27 to 71 years.

There was no correlation between sex and radiosensitivity of the leukopoietic marrow in any of the patients. No association of age with white blood cell sensitivity was demonstrated. There was no clear correlation between the radiosensitivity of the leukopoietic tissue and the degree of shift to the left. There was no relation between the initial leukocyte count and leukocyte sensitivity. The radiosensitivity of the leukopoietic tissue did not show correlation with the initial hemoglobin level and with its maximum improvement during the first remission. Neither the initial splenomegaly nor the degree of splenic resolution after treatment showed any clear correlation with white blood cell sensitivity. Tabulation of the initial size of the lymph nodes and also of their resolution in response to treatment revealed no correlation with the lymphocyte sensitivity. There was no relation apparent between the quality and the duration of the patient's remission and the radiosensitivity of his leukopoietic tissue. Neither the body weight nor the total amount of P^{32} necessary to induce a remission had any relationship to the half-value dose. None of these patients had been previously treated, and this study was concerned with the first remission of their disease.

These data suggest that leukemic white blood cells or the leukopoietic marrow from which they arise respond to radioactive phosphorus therapy with a sensitivity that bears no relation to the underlying disease process. The prognosis in any case, in terms of both the quality of a remission and the duration of survival, bears no relation to intrinsic white blood cell sensitivity.

Radiologic Aspects and Meaning of the Involvement of the Pulmonary Circulation in Patients with Silicosis. R. Ghislanzoni and D. Zannini. Minerva med. 47:1901-1910 (Dec. 8) 1956 (In Italian) [Turin, Italy].

The roentgenologic findings in a group of 150 patients with silicosis and silicotuberculosis were studied and compared with the clinical and electrocardiographic findings. The pulmonary vessels stood out clearly and their shadow was different from that of the hilum and of the parenchyma. Ectasia, deformities, and blocking of the pulmonary vessels were noticed. These alterations are an early sign of involvement of the pulmonary circulation; they may appear even before the electrocardiographic and clinical signs of silicosis. The patient should be kept under observation when the radiologic findings are positive even though the electrocardiographic and clinical findings are negative. The cardiovascular system is already involved when the roentgenologic findings are positive and the other findings are suspected or uncertain.

PHYSIOLOGY

Effect of a Fat Meal and of Heparin on the Electrophoretic Lipidograms in Young and in Atherosclerotic Subjects. M. Coppo, R. Lorenzini and E. Innocenti. Gior. gerontol. 6:599-630 (Dec.) 1956 (In Italian) [Florence, Italy].

The authors studied the effect of a fat meal and an intravenous injection of heparin given together or separately on the electrophoretic lipidograms of 11 patients. In 2 patients the alcohol-ether extractibility of serum lipids was also studied. The patients were divided into 5 groups. In the 1st group were 4 women, aged 23 to 36, with no signs of atherosclerosis and with a normal blood cholesterol level. In the 2nd

category was a 49-year-old man with myocardial arteriosclerosis. In the 3rd category was a 56-year-old man with myocardial arteriosclerosis, auricular fibrillation, and angina pectoris. In the 4th group were a 62-year-old woman with a recent myocardial infarction and a latent duodenal ulcer and 2 men, aged 66 and 60 respectively, with angina pectoris and myocardial arteriosclerosis. In the 5th group were a 46-year-old man with hypertensive arteriosclerosis and myocardial damage and a 77-year-old man with normotensive sclerosis of the myocardium. The electrophoretic patterns of the fasting patients confirmed the presence of slight changes in the protein content and marked changes in the lipid content. These changes were related to the age and the presence of atherosclerotic lesions. The fat meal made the lipemia and the cloudiness of the serum increase, and the medium and slow waves of the lipids become more marked and retarded. The effect of the fat meal was more marked and more prolonged in elderly patients with atherosclerosis than in young patients without atherosclerosis. Heparin given intravenously during the meal attenuated the lipemia, accelerated the medium wave, accentuated the fast wave, and reduced the amplitude of the medium and slow waves. The presence of hypercholesteremia did not change the effect of the fat meal and of the heparin. The authors believe that the fat meal has an atherogenic effect.

Pain, Fear, and Anger in Hypertensives and Normotensives: A Psychophysiological Study. J. Schachter. Psychosom. Med. **19**:17-29 (Jan.-Feb.) 1957 [New York].

This study is concerned with the physiological specificity of emotional behavior in subjects known to have hypertensive cardiovascular disease. The author cites 3 hypotheses that have been derived from studies of emotional behavior in both normotensive and hypertensive persons. The persons studied came mostly from the middle and lower socioeconomic groups and included cooks, clerks, electricians, and housewives who were searching for employment. On the basis of recorded blood pressure levels and histories, the total of 48 subjects was divided into 3 groups—normotensive, potentially hypertensive, and hypertensive. Each person was subjected to pain, fear, and anger stimulation. Twelve physiological variables were studied: systolic pressure, diastolic pressure, peripheral resistance index, cardiac-output index, stroke-volume index, heart rate, hand temperature, face temperature, galvanic skin response, muscle potential, inspiratory index, and respiratory rate. In acute fear, 35 of the 48 subjects had a predominantly epinephrine-like response. During the pain of the cold pressor test, 31 of the 48 subjects had a predominantly norepinephrine-like reaction. In anger, 19 showed a norepinephrine-like effect, 22 showed an epinephrine-like effect, and 7 showed mixed effects. Different psychological intensities of anger tend to be associated with different physiological responses, although the differences are not statistically significant.

A group of 18 hypertensive persons showed on the average significantly greater rises in blood pressure during pain, fear, and anger than a group of 15 normotensive persons. The variance of the blood pressure responses of the hypertensive exceeded that of the normotensive persons. Face temperature during anger dropped less in the hypertensive than in the normotensive persons. There is no way of determining whether this is more than a chance finding. Measures of peripheral resistance index, cardiac-output index, stroke-volume index (based on cardioballistograph tracings), heart rate, hand temperature, psychogalvanic skin response, muscle potential, inspiratory index, and respiratory rate failed to show significant differences between hypertensive and normotensive individuals in pain, fear, or anger. This particular group of 18 hypertensive persons exposed to the procedures stimulating acute emotional reactions tended to express psychologically more fear and anger than 15 normotensive persons, although the differences were not statistically significant. Correlation analysis, which avoided the arbitrary designation of blood-pressure groups, revealed that for these 48 subjects resting mean blood pressure showed a significantly positive correlation with ratings of psychological intensity of acute fear and acute anger in this experiment.

Succinic and Malic Oxidase in Gastric Hydrochloric Acid Production. J. J. Vitale, O. M. Jankelson, P. Connors and others. Am. J. Physiol. **187**:427-431 (Dec.) 1956 [Washington, D. C.].

The fact is generally accepted that the parietal cells of the gastric mucosa are the site of hydrochloric acid production, but it is not clear whether hydrochloric acid is secreted as such, whether an inactive precursor is transformed into the acid elsewhere in the mucosa or the gastric lumen, or what biochemical process is involved. The effect of histamine on the activity of succinic oxidase and malic dehydrogenase was studied in guinea pig and human gastric mucosa. Human tissue was obtained through the surgical services of a Boston hospital. The initial value for the activity of the succinic oxidase system for the proximal half of the guinea pig stomach was about 480 microliters of oxygen consumed per milligram of nitrogen per hour. After histamine injection, this value rose to 550 microliters in 30 minutes, with a simultaneous rise in titratable acidity of the stomach contents. In animals, fasted for 72 hours the corresponding figure was 500, and after histamine injection it was 700 microliters. Spectrophotometric analysis of succinic dehydrogenase and cytochrome oxidase activities, 2 of the major components of the succinic oxidase system, revealed that both components are increased after histamine administration. Malic dehydrogenase, however, was not affected by histamine treatment. Succinic dehydrogenase was demonstrated by histochemical localization and was concentrated below the superficial mucous layer where parietal cells were abundant. Succinic oxidase activity of human gastric mucosa was demonstrable only in those specimens containing abundant parietal cells. This study confirms the view that hydrochloric acid production by parietal cells is associated with aerobic metabolism and is perhaps under enzymatic control. The study suggests that the succinic oxidase system may be involved in the production of secretion of hydrochloric acid.

BOOK REVIEWS

Carcinoma of the Breast: The Study and Treatment of the Patient. By Andrew G. Jessiman, F.R.C.S., M.D., Henry E. Warren Fellow and Assistant in Surgery, Harvard Medical School, Boston, and Francis D. Moore, M.D., Moseley Professor of Surgery, Harvard Medical School. New England Journal of Medicine Medical Progress Series. [This monograph is expanded from material which first appeared as a Medical Progress Report in *New England Journal of Medicine* under title of "Carcinoma of the Breast."] Cloth. $4. Pp. 135, with 21 illustrations. Little, Brown & Company, 34 Beacon St., Boston 6; J. & A. Churchill, Ltd., 104 Gloucester Pl., Portman Sq., London, W.1, England, 1956.

This short, well-written, and readable book attempts to bring order to the confusion existing in the literature and in the minds of many clinicians as to the most satisfactory method of therapy in a given type and stage of cancer of the breast. Excisional biopsy is advocated as preferable to incisional biopsy. Simple mastectomy for biopsy is suggested. Clinical diagnosis, preliminary x-ray therapy, biopsy of movable nodes, and needle biopsy are said to be preferable to "frontal assault on a massive local lesion for confirmation of an obvious diagnosis." Many will disagree with the authors' opinions concerning biopsy. Radical mastectomy is advocated for clinical stage 1 and early stage 2 lesions. For more advanced lesions, the McWhirter method or no surgical interference is proposed. Radiation is advised in all patients with axillary metastases and for painful metastatic lesions in bone but not in the viscera. The book emphasizes the endocrine aspects and background of cancer of the breast. The influence of the normal ovary, the ovary presenting cortical stromal hyperplasia, and the adrenals and the pituitary, and the interrelations of these parts of the endocrine system, are clearly described. There is a discussion of removal of the endocrine factors by surgical excision or irradiation of the organs concerned, the effect of such procedures, and the indications for giving estrogens and androgens. The diethylstilbestrol stimulation test is also discussed. In their systematic effort to plan effective long-range therapy, the authors have evolved a novel but practical classification of type and stage of disease. The factors are partially clinical and are partially based on the diethylstilbestrol test and laboratory studies. A plan of treatment is outlined for each category. The authors recognize that opinion in this field is in a state of flux and that subsequent developments may alter the recommendations made. Much important information is compressed into this small book which is well worth reading and studying.

Clinical Orthopaedics. Number 8. Anthony F. DePalma, editor-in-chief. With assistance of associate editors, Board of Advisory Editors, Board of Corresponding Editors. Cloth. $7.50. Pp. 337, with illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; 2083 Guy St., Montreal, Canada; Pitman Medical Publishing Co., Ltd., 39-41 Parker St., Kingsway, London, W.C.2, England, 1956.

This volume is similar in content to the previous volumes of this series in that the first portion deals with a specific general subject under discussion and the second part consists of individual presentations on various orthopedic subjects. It begins with an excellent biographical sketch of Lewis Bower, showing his personal influence on orthopedic surgery in this country. The next section deals primarily with chronic hereditary diseases and developmental anomalies. The various subdivisions are well presented and adequate bibliographies are included. The photographs and line drawings used throughout this book are well done and are more than adequate to clarify the subject matter. Of the presentations in the last half of the book, that on hemophilic arthropathy is especially good. The combined papers on motorist injuries and motorist safety are excellent. Everyone having to deal with trauma would do well to read this section, be he physician, automobile manufacturer, or safety director.

Liver: Structure and Function. By Hans Popper, M.D., Ph.D., Director, Department of Pathology, Cook County Hospital, Chicago, and Fenton Schaffner, M.S., M.D., Co-chairman, Department of Medicine, Woodlawn Hospital, Chicago. Cloth. $20. Pp. 777, with 205 illustrations. Blakiston Division, McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36; 95 Farringdon St., London, E.C.4, England, 1957.

In this volume the subject of liver disease is presented from the point of view of the pathological anatomist and the pathological physiologist. Within the bounds of present knowledge, structural changes in the liver are correlated with biochemical and other functional changes as well as with clinical findings. The first section deals in detail with normal structure and function of the liver. In part 2, general pathological phenomena are discussed, including jaundice, inflammation, cholestasis, fatty metamorphosis, fibrosis, and cirrhosis. Part 3 is devoted to liver function tests, including the use of x-ray and liver biopsy. Specific diseases of the liver are described in parts 4 and 5 and tumors in part 6. In the final section is a discussion of the relation of the liver to the hematopoietic system, to the gastrointestinal tract, to the endocrine glands, and to other systems in the body and of the hepatic response to stress.

The book is profusely illustrated, there being over 200 plates. The photomicrographs, for the most part from the authors' own collection, are noteworthy. The presentation is concise and clear and well documented. The thoroughness with which the manuscript was prepared is attested to by the extent of the bibliography, which includes over 3,700 references. This book represents the most complete and most up-to-date presentation of the subject currently available. It is of particular importance because of the radical developments in this field in the last decade. Its value is greatly enhanced because of the senior author's extensive personal experience in the field, as well as his comprehensive knowledge of the literature. This book is essential for all those who are seriously interested in the study of liver disease.

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

QUERIES AND MINOR NOTES

X-RAY THERAPY TO THE ABDOMEN DURING PREGNANCY

To the Editor:—*For the past 18 years I have been routinely taking flat plates of the abdomen on my obstetric patients to determine the presence of multiple pregnancies, pelvic disproportions, and monsters. Now I understand there is some question as to the advisability of doing this. I wish to have advice on whether there is any definite contraindication to taking a single flat-plate x-ray of the abdomen of a pregnant woman during the first week of the ninth month of pregnancy.*

Roy F. Messinger, M. D., Plentywood, Mont.

This inquiry has been referred to two consultants, whose respective replies follow.—Ed.

Answer.—There is no contraindication to taking a single, flat x-ray film of the abdomen of a pregnant woman during the latter part of pregnancy.

Answer.—It has not been proved that there is any harm to the mother or infant from taking a single x-ray picture of the abdomen of a woman during the last trimester of pregnancy. The harmful effects of radiation during pregnancy that have been reported have resulted from x-ray therapy, usually for profuse uterine bleeding from an enlarged uterus in which early pregnancy was unsuspected.

SURVIVAL OF RED BLOOD CELLS

To the Editor:—*Do red blood cells keep their vitality longer while circulating in their natural medium or in acid-citrate-dextrose solution? What is the time difference?*

Alfred R. Ross, M. D., Bremerton, Wash.

Answer.—Human erythrocytes within the circulatory system represent a changing population, replaced and removed at the rate of approximately 1% per day, i. e., experimentally, very fresh erythrocytes moved by transfusion from healthy donors to healthy compatible recipients display a pattern of disappearance from the recipient's circulation at the rate of approximately 1% per day. If, however, an intermediate period of storage in the refrigerator is imposed between removal of blood from the donor and infusion into the recipient, persistence of such erythrocytes in the recipient is strongly influenced by the type of anticoagulant preservative solution employed, by storage conditions, and by duration of storage. The major loss occurs within approximately 24 hours after transfusion, while erythrocytes surviving this period follow the normal pattern of disappearance at the rate of approximately 1% per day. For donor blood drawn in accordance with customary blood bank procedures, treated with acid-citrate-dextrose solution, and stored at 2 to 10 C (preferably 4 to 6 C) for up to approximately 10 days, viability is essentially that of fresh blood. With longer storage, loss of erythrocytes in the immediate post-transfusion period becomes appreciable. After 21 days of storage, some 90% of infused erythrocytes display normal survival in the recipient; after 28 days of storage, perhaps 67%. Blood banks consider citrated whole blood satisfactory if 70% or more of the infused erythrocytes may be expected to show normal survival and apply an expiration date of three weeks from venesection for blood drawn into acid-citrate-dextrose solution.

The above data apply to acid-citrate-dextrose solution and healthy recipients. In practice, the recipient is ill, and lesser survival rates may be encountered, depending upon the nature of the illness; e.g., in such disorders as active hemorrhage or acute hemolytic anemia, both fresh and stored blood are subject to complicating factors.

POLIOMYELITIS VACCINE BOOSTER INOCULATIONS

To the Editor:—*Please provide information concerning the timing of poliomyelitis vaccine booster inoculations after the initial course of three injections.*

C. C. Henriques, M.D., Susanville, Calif.

Answer.—There has been no uniform procedure yet established and recommended for reinoculation with poliomyelitis vaccine after the original three doses. However, it may be wise in the present year to give another injection to those of the most susceptible age group. It is not expected, however, that this would be a yearly requirement thereafter.

TESTOSTERONE THERAPY

To the Editor:—*Could 10 to 15 injections of 10 to 25 mg. of testosterone propionate result in development of leukemia or myeloblastic changes in the bone marrow? The patient was treated for painful cystic breasts.*

M.D., New York.

This inquiry has been referred to two consultants, whose respective replies follow.—Ed.

Answer.—There have been no documented cases in which testosterone propionate has resulted in the development of leukemic change in the bone marrow. When this preparation is used in the palliative management of metastatic carcinoma of the breast, a rise in the hemoglobin level and in the red blood cell count may occur, but no malignant change in the form of leukemia has been reported.

Answer.—Testosterone propionate is not known to be a factor in the development of leukemia or in stimulating the bone marrow so as to bring about myeloblastic changes. The treatment of painful breasts

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

by the injection of testosterone in the dosage and frequency indicated would not be associated with the development of leukemia.

CHLORPROMAZINE JAUNDICE

To the Editor:—*The incidence of chlorpromazine jaundice is usually given as one case in 50,000 to 100,000 persons receiving chlorpromazine. Does this include the numerous patients given the drug casually for a short period? Would the incidence be much higher among institutionalized psychiatric patients?* *M.D., New York.*

Answer.—The incidence of chlorpromazine jaundice is usually given as 1.5% plus or minus, rather than 1 in 50,000 to 100,000. The latter figure is given as the approximate incidence of agranulocytosis. Figures for institutionalized patients receiving chlorpromazine vary from as low as 0.1% to as high as 4% for the incidence of jaundice. In general, the larger the series the lower the incidence.

ACHONDROPLASIA

To the Editor:—*A 4-month-old girl has been given a diagnosis of achondroplasia; she has characteristic clinical and radiologic signs. Both parents are perfectly healthy and in their 20's. Neither has any family history of gross disturbances. This baby is their first child. Is there an increased possibility of achondroplasia in subsequent offspring? Is there any therapy for this infant?* *M.D., Canada.*

Answer.—There is no tendency for increased incidence of achondroplasia in subsequent offspring. This condition is congenital, but it is not in the group of hereditary bone dystrophies. No treatment that affects the basic cause is known, although corrective procedures may be done on the lower extremities, which are frequently bowed. These patients usually lead a normal life, both mentally and physically.

TREATMENT OF PLAQUES IN EYELIDS

To the Editor:—*Is there any satisfactory treatment for the collection of cholesterol on the upper and lower eyelids of a patient who has no family history of hypercholesterolemia? The serum cholesterol level has not been determined, but there are no other signs or suggestions of hypercholesterolemia.*

M.D., Louisiana.

Answer.—The question refers to the pale brown, chamois-colored plaques of varying size and shape in the skin of the inner half of the eyelids. Found most often in women, they are usually flat or only slightly raised. The old textbooks referred to them as "liver spots." They can be removed by applying trichloracetic acid. A swab made by tightly winding a small bit of cotton on the pointed end of a wooden toothpick is dipped into full-strength trichloracetic acid. All excess must be removed. The damp swab is rubbed over each spot, care being taken to avoid coating the uninvolved skin. Enough is painted on to turn the lesion white. Usually after a few days the eschar falls off, and the underlying skin is found to be free from discoloration. Occasionally more than one treatment is necessary.

DIATHERMY TO ABDOMEN CONTRAINDICATED IN PREGNANCY

To the Editor:—*Is there any contraindication to the use of short-wave diathermy on the abdomen of a patient during pregnancy?*

George C. Douglas, M. D., Birmingham, Ala.

Answer.—In view of the fact that little is known about the effects of short-wave diathermy applied to the abdomen of a patient during pregnancy, it is safest to avoid it. If heat is required for the abdomen, it should be from a hot water bag or, if a greater area is to be covered, a radiant heat lamp. The distance should be such that only mild heat is applied to the abdomen, and the maximum duration of any one heat treatment should be one hour.

CORTICOTROPIN FOR HYPEREMESIS GRAVIDARUM

To the Editor:—*Some months ago there was a report in the literature about the value of injections of corticotropin (ACTH) in hyperemesis gravidarum (severe vomiting of pregnancy). I have tried it three or four times in severe cases, with excellent results. Is there any danger in giving this to the pregnant mother in early pregnancy, and can any adverse effect on the fetus be anticipated?*

Blackwell Sawyer, M.D., Toms River, N. J.

Answer.—Because of the similarity of symptoms characteristic of the syndrome of general adaptation (particularly the alarm-reaction phase) and those of many pathological conditions that occur during pregnancy, certain workers have been using corticotropin in treatment of toxemias of the first few months of pregnancy. Although the hypothesis will have to be confirmed by further studies, corticotropin has been used in 15 cases of hyperemesis gravidarum with excellent results (Carreras: *Obst. & Gynec.* 3:50, 1954). These patients were all relieved of the condition, and all babies were normal at term.

VITAMINS IN DIABETES

To the Editor:—*What is the value of the routine administration of multivitamins to diabetics in forestalling vascular complications? Is there any substantial evidence showing the value of vitamin B_{12} in lessening the insulin requirements?*

Anthony J. Bamonte, M.D., Philadelphia.

Answer.—Multivitamin preparations have no known value in forestalling vascular complications in diabetics. In treatment of diabetics who are suffering from starvation, with consequent fatty infiltration of the liver and high blood fat levels, multivitamin preparations are used routinely along with adequate insulin and a well-rounded diet to reestablish a state of good nutrition. It is thought that early vascular complica-

tions are more likely to occur in diabetics who have these evidences of malnutrition. The arteriolar vascular changes associated with Kimmelsteil-Wilson syndrome appear to bear no direct relationship to malnutrition. There is no substantial evidence showing that vitamin B_{12} in any way lessens the insulin requirement. Many authors have claimed that vitamin B preparations in general do so, but, in well-nourished diabetics who have no vitamin B deficiencies, administration of any member of the vitamin B complex or all at once has no effect on insulin dosage. Vitamin B_{12} is useful in diabetic neuritis.

PHYSICAL EXERCISE IN CHILDREN

To the Editor:—*Will teaching a child of about 10 years of age to pitch a baseball, using various curves such as used by players in the big leagues, lead to any orthopedic deformities of the arm and shoulder girdle in later life? There are many who feel that children about the age of 10 should be taught to pitch a baseball in a normal straightforward manner without practicing the various curves. There does not seem to be any answer in the available textbooks.*

M.D., California.

This inquiry has been referred to two consultants, whose respective replies follow.—ED.

Answer.—There are no available long-term studies to give a definitive answer to this question. It would seem logical, based on experiences in other activities, that young children could be safely taught to pitch curves. The coaching should include a period of gradual conditioning so that the children do not develop painful arms. If they are permitted to overextend themselves so that they develop pain, it is conceivable that temporary or permanent damage to the shoulder girdle may result.

Answer.—There is no known exercise or physical maneuver that will lead to orthopedic deformities other than an increased development in the muscular and bony structure of an extremity if an exercise is repeated in athletic endeavors. Baseball players, especially pitchers, are prone to develop tendon cuff degeneration earlier than normal in the shoulder and a traumatic arthritis of the elbow joint. This would be a possible risk in intensive training in baseball players in early life, but it probably would not be of enough significance to restrict such activity.

PREDISPOSITION TO LOW BACK STRAIN

To the Editor:—*Is there any information available concerning the preemployment examination of laborers? In particular, are there any tests that would single out those subject to low back strain? The employer of these men does not wish to have x-rays made of the employees' spines, and so far there do not seem to be satisfactory tests to determine the functional ability of a particular person's back.*

Homer E. Byrd, M.D., Carthage, Mo.

Answer.—There is no test that has been devised and reported that can demonstrate that a candidate for employment would be subject to low back strain. If the employee is not, at the time, suffering from the effect of a preexisting back strain or other pathology in the spine, all of the tests would be negative.

TOTAL BIRTH WEIGHT OF TWINS

To the Editor:—*I recently delivered twins weighing 9 lb. 4 oz. (4,337 Gm.) and 9 lb. 9.5 oz. (4,493 Gm.). This mother has had two other children, both over 9 lb. (4,082 Gm.) at birth. Is the weight of the twins a record at all?*

M.D., Montana.

Answer.—There are cases on record in which the total birth weight exceeded 18 lb. 13.5 oz. (8,831 Gm.). The heaviest total birth weight for twins, recorded in *Northwest Medicine* (37:137, 1938) as having been reported in *Lancet* (2:1029, 1884), is 35 lb. 8 oz. (16,103 Gm.).

GYNECOMASTIA AT AGE 50

To the Editor:—*A 50-year-old man has feminization of the breasts of three months' duration. He is normally virile, with normal distribution of hair; physical examination is negative. The sella turcica and bones are normal on x-ray examination. An ophthalmologist reports that there is a suspicion of cuts on both lower temporal quadrants, but in view of normal fundi and normal skull on x-ray examination, no significance can be attached to these visual field cuts. The patient was given 25 units of corticotropin (ACTH) on two successive days during an 8-hour period; on the second day his urine was collected for a 12-hour period. The normal standards used were ketosteroids, 5 to 20 mg.; glucosteroids, 3 to 8 mg.; and gonadotropins, 6 to 20 mouse uterine units. In this patient, the control values were ketosteroids, 7.4; glucosteroids, 7.9; and gonadotropins, –6. After the administration of corticotropin the values were ketosteroids, 20.4, and glucosteroids, 2.5; gonadotropins were not studied. Please comment on this case.*

M.D., Pennsylvania.

Answer.—The clinical information and laboratory data on this 50-year-old "virile" male patient are inadequate. However, gynecomastia in the adult male may be due to a nutritional imbalance; to Klinefelter's syndrome, in which there is azoospermia secondary to hyaline degeneration of the semeniferous tubules; to chorioepithelioma of the testis; or to a feminizing tumor of the adrenal, which is extremely rare. A semen specimen should be obtained to rule out azoospermia. The presence of sperm would eliminate Klinefelter's syndrome, and a testicular biopsy would, therefore, be unnecessary. The control study of 17-ketosteroids and 11-oxysteroids should be repeated, as the values are inconsistent with those obtained after administration of corticotropin. Gonadotropins should be normal in a virile male. The urinary level of estrogens may be obtained to serve as a basis for future determinations should this patient's virility cease and feminization progress.

PURPURIC SPOTS IN ARTHRITIC PATIENTS

To the Editor:—*Please discuss treatment of purpuric spots occurring with rheumatoid arthritis. Blood platelet count is normal. All findings are negative except evidence of arthritis.*

Harry R. Deane, M.D., St. Petersburg, Fla.

This inquiry has been referred to two consultants, whose respective replies follow.—Ed.

Answer.—Purpuric spots and ecchymoses are found frequently in patients with rheumatoid arthritis and are seen occasionally among patients with osteoarthritis also. The incidence in osteoarthritis is, however, notably less. The cause is unknown. The platelet count and bleeding and clotting times are normal. Prothrombin times are within normal limits. Generally, there is no leukocytosis and the Rumpel-Leede test often shows numerous petechiae below the tourniquet. The bone marrow shows only evidences of active proliferation of the leukocyte series of cells. This condition is apparently distinct from the so-called purpura rheumatica or Shoenlein's purpura, which in all likelihood is a manifestation of rheumatic fever being accompanied by fever and articular pains and in some instances, at least, being followed by development of chronic deforming endocarditis.

Administration of steroids as a treatment measure for arthritis appears to accelerate somewhat the occurrence of purpuric spots and ecchymoses. In fact, some patients under treatment with these new agents suffer continuously from extensive ecchymoses about the forearms and hands and about the lower extremities. Recovery from the purpura and ecchymoses accompanying rheumatoid arthritis generally occurs spontaneously and is facilitated by withdrawal of hormone therapy. Aside from the fact that purpura and ecchymoses are somewhat disfiguring when present, these lesions cause little discomfort and generally may be disregarded. Rarely, extensive ecchymoses located about the extremities may break down and ulcerate, with resulting indolent or slowly healing ulcers. There is a possibility in occasional instances that suppression of prothrombin may result from salicylates, a consideration that should be kept in mind. If hypoprothrombinemia from salicylate intoxication can be demonstrated, withdrawal of salicylates should result in prompt recovery.

Answer.—Little has been learned about these purpuric spots since Garrod wrote in 1890 that "purpura rheumatica" was an obscure disease. On the basis of personal clinical observation, this consultant strongly suspects that the purpura seen in rheumatoid arthritis is closely allied to the vasculitis characteristic of the collagen diseases. It may well be that those rheumatoid patients who show purpura and ecchymoses have atypical cases of lupus erythematosus.

RECURRENT BILIARY COLIC

To the Editor:—*I am writing regarding a comment by Dr. Roland T. Smith in the Feb. 16, 1957, issue of* The Journal, *page 610. Dr. Smith's comment was in reference to a query on recurrent biliary colic that appeared in* The Journal *for Nov. 17, 1956, page 1200. I believe that Dr. Smith is making a difficult diagnostic problem out of the "nonfunctioning gallbladder." It has been my experience that since the advent of the intravenous gallbladder dye, Cholografin, roentgen examination of the gallbladder is almost 100% accurate. If the gallbladder cannot be visualized on two separate occasions when the dye is given orally, and if the common duct, but not the gallbladder, can be visualized when the dye is given intravenously, the fact that the common duct can be visualized indicates, I believe, that the liver function is within limits of normal. In this situation, there is almost a 100% chance that there is obstruction in the cystic duct as the result of lodgment of a calculus in the duct, and in 99% of these cases there are stones in the gallbladder. I do not have any faith in "duodenal drainage" and feel that this procedure should be discarded.*

E. J. Keeffe, M.D., Radiologist
St. Joseph Mercy Hospital
Pontiac, Mich.

ULNAR NERVE PALSY

To the Editor:—*In* The Journal *of Feb. 9, 1957, page 517, an inquiry concerning a 44-year-old farmer from the Pecos Valley of New Mexico is discussed. While the replies of the consultants answered the specific question raised, it would seem that the discussion was incomplete. Unilateral ulnar neuropathy in a man from this geographical location should make one highly suspicious of leprosy. In its early stages the neural form of leprosy frequently involves only one nerve. The cutaneous lesions generally associated with leprosy may be evanescent or may not appear for a number of years after the onset of neuritic symptoms.*

In this case, presumably the more common causes for an ulnar neuropathy have been eliminated as diagnostic possibilities. It might be well to investigate the problem with leprosy in mind.

C. Clark Leydic Jr., M.D.
2435 E. Adams St.
Tucson, Ariz.

To the Editor:—*In* The Journal *for Feb. 9, 1957, in the Queries and Minor Notes, page 517, under the title "Ulnar Nerve Palsy," a physician describes sensory and motor impairment in the distribution of the right ulnar nerve in a 44-year-old farmer. I would like to suggest that, in view of the thickening of the nerve, serious consideration should be given to the possibility of leprosy. Nasal smears are likely to be negative. The same is true of skin scrapings. Biopsy of the affected nerve may confirm the diagnosis, if the case is one of leprosy.*

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* Smith, J. A.: *J.A.M.A.*, 152:38, May 30, 1953. Brown, W. T., and Smith, J. A.: *South. Med. Jour.*, 46:582, June, 1953. Smith, J. A.: *Postgrad. Med.*, 16:316, Oct., 1954. McCullagh, W. H.: *Jour. Florida Med. Assn.*, 41:715, Mar., 1955.

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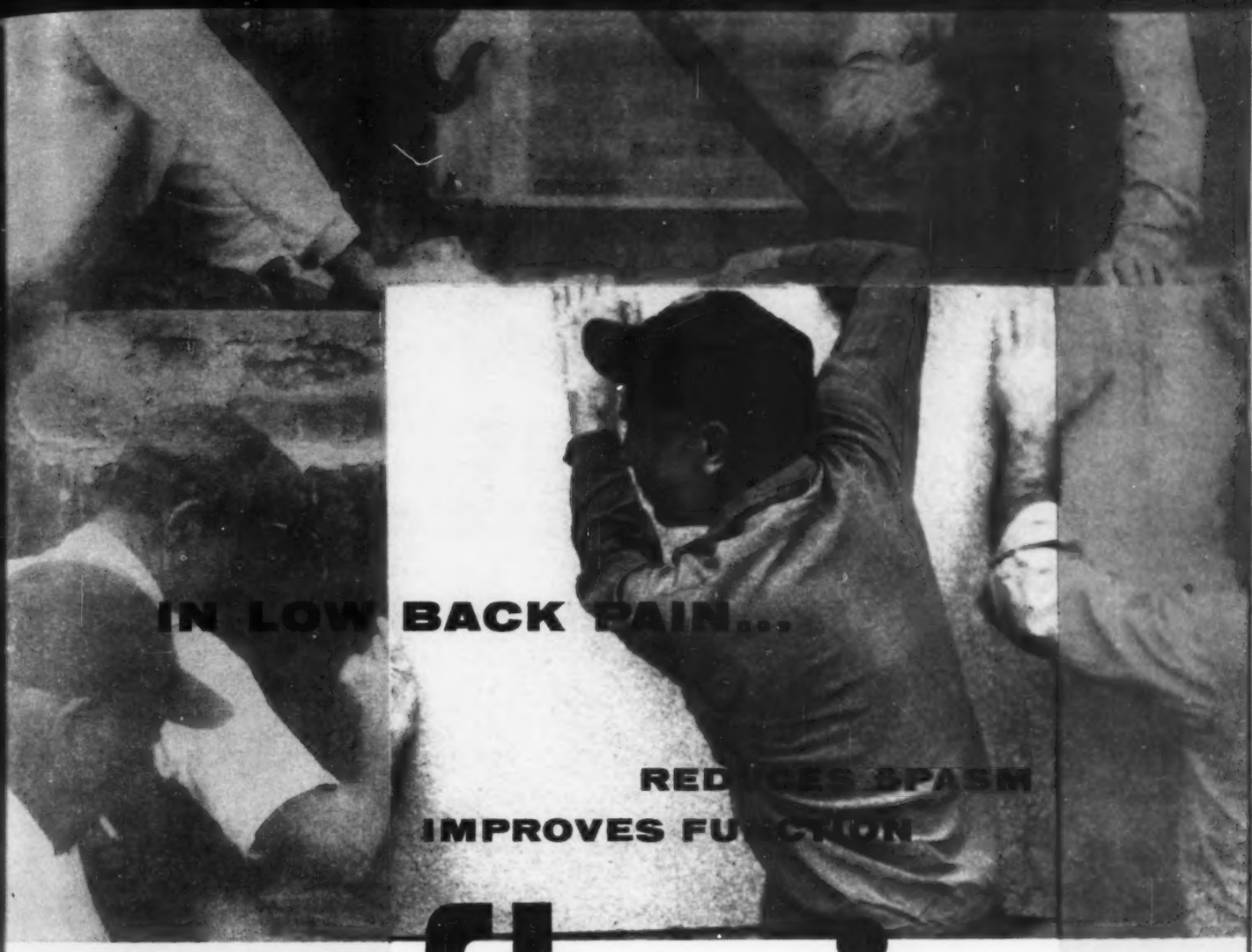
(Continued on page 58)



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"How am I out of order?" shouted the man from Ohio.

"Perhaps a veterinarian could tell you," answered Johnson.

This was allowed to remain on the record.

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From the pages of the *Reader's Digest*, here's a story concerning a hard-working family doctor in Minneapolis who was plagued by a well-to-do hypochondriac.

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(Continued on page 62)

(Continued from page 56)

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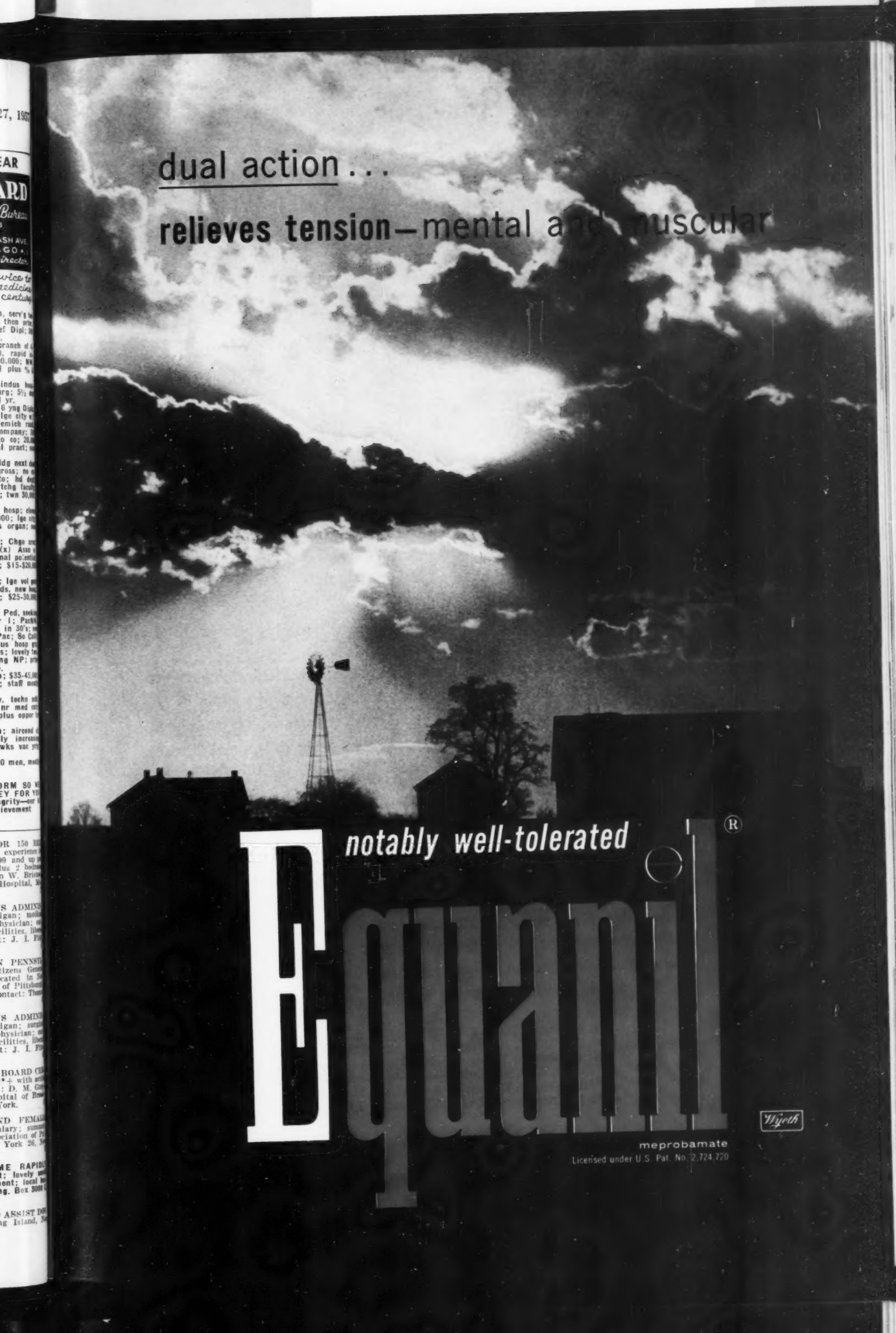
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1. Bernhardt, H. J., Katz, S., Oxley, L. O., Prigot, A., Putnam, L. E., Rein, C. R., Tittle, C. R., Wachtel, L. M., and Weller, C.: Personal communications. **2.** Council on Foods and Nutrition, American Medical Assn.: J.A.M.A. 163:739, 1957. **3.** Cronk, G. A., and Naumann, D. E.: Ant. Med. & Clin. Ther. 4:166, 1957. **4.** Kaplan, M. A., Dickison, H. L., Hubel, K. A., and Buckwalter, F. H.: Ant. Med. & Clin. Ther. 4:99, 1957.

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COMMUNITY NEEDS GENERAL PRACTITIONER—graduate of class A school; new 24 bed hospital; airconditioned office available; excellent fishing and hunting. Write: Box 188, Danville, Arkansas. C

WANTED—BY SMALL GROUP IN NORTH DAKOTA; physician for general practice who has had surgical experience or training; salary open; give details 1st letter. Box 3273 C, % AMA.

400 BED GENERAL HOSPITAL*+ — LOCATED IN Mid-West; desires an anesthesiologist to assume some administrative duties and be available for anesthetics. Box 3223 C, % AMA.

SURGEON—CALIFORNIA GROUP; UNDER 15 DOCtors; seek surgeon eligible or certified; age to 45; guarantee of $12,000 against percentage. Continental Medical Bureau, Agency, 510 W. 6th, Los Angeles 14. C

WANTED—RADIOLOGIST; CERTIFIED OR BOARD qualified; to head department in new 130 bed hospital in the middle west; diagnosis and therapy and radioactive isotopes. Box 3235 C, % AMA.

GENERAL PRACTITIONER—NEAR SAN DIEGO, CALifornia; a recommended association for a young doctor with minimum 2 years training. Continental Medical Bureau, Agency, 510 W. 6th, Los Angeles 14. C

CENTRAL PENNSYLVANIA GENERAL PRACTITIONer—desires assistant; large practice; partnership or guaranteed salary $15,000, plus. Write giving profession and personal background. Box 3230 C, % A.M.A.

WANTED — RETIRING GENERAL PRACTITIONER wants a young doctor to take over his long-established practice; excellent location in Wisconsin; will help finance. Box 2974 C, % AMA.

WANTED — YOUNG PHYSICIANS; INDUSTRIAL pharmaceutical and chemical companies and hospitals; psychiatrists, anesthesiologists. Medical Personnel Agency, 7 East 42nd St., New York, New York. C

STAFF PHYSICIAN—170 BED TUBERCULOSIS HOSpital in Ohio; present census 103; position open now; Ohio license necessary; furnished 3 bedroom house available. Box 3257 C, % AMA.

WANTED — PHYSICIAN; FOR LONG-ESTABLISHED industrial office; central California; regular hours; limited night work; good starting salary; must have some surgical experience. Box 3255 C, % AMA.

WANTED—HOUSE OFFICERS; 140 BED GENERAL hospital; California license required. Apply: Administrator, St. Francis Hospital, Santa Barbara, California. C

PEDIATRICIAN—BOARDS OR ELIGIBLE; TO ASSOciate in busy practice in rapidly growing city in northern California. Box 3050 C, % AMA.

VIRGINIA — MENTAL HOSPITAL PHYSICIANS; these positions involve the performance and supervision of medical care and administrative services for patients in a 2800 bed mental hospital in the Shenandoah Valley of Virginia; merit increases, vacation, and sick leave with pay, retirement benefits; clinical director; must be eligible for certification in psychiatry by Board of Neurology and Psychiatry; 5 years experience in clinical psychiatry; furnished house available on grounds; starting salary $12,000 per year; Chief of service; 4 years of psychiatric experience, at least 2 of which must have been in a mental hospital; State license or eligibility therefor; staff physician; 2 years of psychiatric experience, at least 1 of which must have been in a mental hospital; license to practice medicine in State or eligibility therefor; junior physician; graduate from a recognized medical college supplemented by 1 year of rotating internship in an approved hospital; license to practice medicine in State or eligibility therefor. Apply for the above positions to: Superintendent, Western State Hospital, Staunton, Virginia. C

WANTED—FELLOW IN GENERAL PRACTICE; BY 20 man midwest group composed of young university hospital trained Board diplomates, working in close cooperation with non-profit church hospital; 1 year program designed for those who want to do general practice and surgery in smaller communities; safe and accurate management of more common ordinary surgical procedures emphasized; one just completing military duty or one wanting to leave practice for additional training desired; women accepted; more than adequate salary. Box 3205 C, % AMA.

PHYSICIANS—PATHOLOGIST, OPHTHALMOLOGIST, general practitioner (ENT training), general practitioner (Dermatology training); physicians (General practice); physician (Chest experience); physician (Epidemiology); for major oil company with extensive foreign middle east operations; must be U.S. citizens and graduates of accredited medical schools; specialists must be Board certified; candidates under 40 years age preferred; write outlining personal history. Box 3095 C, % AMA.

WANTED — GENERAL PHYSICIANS; UNDER 35 years of age; to assist specialists in professional care program of the 10 Miners Memorial Hospitals; full-time positions with starting compensation at the rate of $12,000 per year. U. S. citizenship and eligibility for licensure in Kentucky, Virginia or West Virginia required. For details Address: The Clinical Directors, Miners Memorial Hospital Association, 1427 Eye Street, N.W., Washington 5, D. C. C

OPHTHALMOLOGIST WANTED—BOARDS, OR ELIgible; under 40; to associate with Board ophthalmologist and Board otolaryngologist, both under 40; salary $18,000 to $20,000; Mid-West; excellent future. Box 3193 C, % AMA.

(Continued on next page)

TONICS AND SEDATIVES *(Continued)*

did you know that?

Edward FitzGerald had to pay for the printing of "The Rubáiyát of Omar Khayyám" before he could get it published.

Both Robert Burns and Rudyard Kipling had to pay for the printing of their early poems.

And Carrie Jacobs Bond, turned down by numerous publishers, borrowed $1,500 and published her own works.

♠

A rather elderly lady once called her doctor and began to recount her catalog of ills.

The doctor, being busy and a little short of temper at the moment, said, "What do you want me to do, Madame? I have done all in my power. I cannot make you young again."

"I know that, Doctor," was the answer, "but I thought you might help me to grow a little older."

♠

♠

Airplanes and trains are two of the safest means of transportation.

For example, if you spent every minute of your life on a commercial plane hurtling about the country at 300 miles an hour, and did not die of some other cause, you would live an average of 400 years.

On the railroad, you could ride continuously at 75 miles an hour with a chance of a fatal accident only once in 2,000 years.

There is no doubt that both air and railroad transportation will get safer, but even now you couldn't do better lying in bed.

♠

salesmen

An integral part of American life and American humor is the salesman. Many anecdotes concern successful selling and ingenuity used in selling. Here are some examples:

When 20th Century Fox advertised in New York papers to fill a vacancy in its sales force, one applicant replied:

"I am presently selling furniture at the address below. You may judge my ability as a salesman if you will stop in to see me at any time, pretending that you are interested in buying furniture.

"When you come in, you may identify me by my red hair, and I will have no way of identifying you. Such salesmanship as I exhibit during your visit will be no more than my usual work-a-day approach and not an effort to impress a prospective employer."

From more than 1,500 applicants, the redhead got the job.

(Continued on page 64)

Requisites for EFFECTIVE LAXATION

PHOSPHO®-SODA
(Fleet)

. . . gentle, prompt, thorough and a laxative of choice for over 60 years.

Taken on an Empty Stomach . . .

at least 30 minutes before any meal, *but preferably before breakfast.*

Amply Diluted with Water . . .

Mix required dose with one half glass of cold water, follow with additional water.

SUGGESTED DOSAGE

As a mild eliminant, two teaspoonfuls before a meal. For more pronounced hydragogue action, four teaspoonfuls before breakfast.

Children: Ten years or older, one half the adult dose; five to ten years, one quarter the adult dose.

Phospho-Soda (Fleet) is a solution containing per 100 cc., Sodium Biphosphate 48 Gm. and Sodium Phosphate 18 Gm.

In preparing for colonic surgery, preoperative administration of neomycin plus cleansing with Phospho-Soda (Fleet) suppresses intestinal bacteria.(1)

(1) Davis, J. H. et al., Surgery, 35:434, 1954

PHOSPHO®-SODA

(*Fleet*)

C. B. Fleet Co., Inc.,
Lynchburg, Virginia
Makers of the Fleet®
Enema Disposable Unit.

(Continued from preceding page)

SHAY MEDICAL AGENCY
55 E. Washington Street
Chicago 2, Illinois
Service of Distinction since 1914

GENERAL PRACTICE: (a) Calif; city of 60,000; with well-estab. G.P. diversified prac; $12,000. Calif; 8 man grp. near S.F. (c) Fla. well estab. grp; excel opp. license req. (d) 6 man grp. near D. C., good sal. start; ptnship 1 yr. (e) Assoc. gen. surg. prac; NW; start; ptnship 1 yr. (f) Assoc; sub. Chgo. large prac. excel pp. ptnship. (g) MW; known grp; own med. bldg. new; $12,000 1st year, 000 2nd. then ptnship. (h) MW; assoc. well- prac. in city 90,000. $12,000. (i) S; Asst. large prac. minor surg. no O.B. $12,000. (j) Assoc. some surg. & O.B. City of 200,000. $10,000 start. (k) NW; assoc. large prac. mining town in resort area. $12,000 start inc. every 3 mo. ptnshp yr. (l) MW. Small grp. Own 35 bed hosp. City $12,000. (m) Med. dir. penal inst; minor surg: $ plus priv. prac. town of 30,000.

HOUSE PHYSICIANS: (a) E; 50 bed hosp; $4200 bedroom apt. (b) E. 65 bed approved hosp.; $5000 maint. incl. furnished house.

INSURANCE: (a) Medical consultant on all general facilities. $10,000 plus. (b) Woman. Supervise employes health program. $10,000.

INTERNISTS: (a) Chief of Clinical Services with standing hosp. grp. $17-$20,000. (b) Well estab. near Chgo. Own aid cond. medical bldg. exc. hosp. cilities. $15,000 1st yr. $18,000 2nd, then ptnshp. MW. 5 man grp. opp. for teaching in med. sch. $12,000. (d) MW. Small grp. in progressive nity. Excel hosp. facilities $12-15,000. (e) NW est. grp. in city 30,000. New clinic bldg. $12 minimum. (f) SW. 11 man grp. all board men; indus. type work.

OB-GYN: (a) MW, well-known grp. city 50,000; $12, (b) NW; cert. not nec; well-estab. grp. city 30, $12,000. (c) SW. Grp. of 5 spec. will be only one spec. $15-20,000. (d) SW; 5 man grp. in city of busy OB-GYN prac. already set up; $15-20,000.

PATHOLOGY: (a) SW; superv. med. spec. of lab. estab. clinic. $15,000 min. (b) NW; assoc. 200 hosp; city 75,000; $12,000 min. (c) S; 175 bed develop dept. Perc. basis; $20,000 guarantee. assoc. Board man; SW; 250 bed hosp; $12,000 then ptnshp. (e) Calif. 300 bed hosp; $12-20,

PEDIATRICS: (a) SW; 10 man grp. growing city 65,000; $12,000 start. (b) Calif; assoc. Board men; large prac; near S. F; $10-$12,000. MW; small grp. in highly populated area; excel. facilities $12-$15,000. (d) E; assoc. with grp. internists; near Phila. $12,000. (e) NW; small new clinic bldg. twn. 15,000; drawing area $12-$14,000. (f) S. Assoc. Board man. Excel. arrangements. Calif. Well estab. med. grp. 12 own med. bldg. $12,000.

PHYSIATRIST: To be Med Dir. Large rehabilitation center, fully approved.

Upon request one of our applications will be mailed you. Write us today—a post card will do.

DIRECTOR OF COUNTY-WIDE HEALTH DEPARTment—in southeastern Michigan; population 78,000 local colleges with university and school of Public Health within 42 miles; staff of 13 with capable supervising nurse; previous experience desirable, but not mandatory starting salary $11,500; must have MD from approved school and Michigan license. Contact: Chairman Health Committee, Lenawee County Health Department 113 West Front Street, Adrian, Michigan.

PHYSICIAN WELL-QUALIFIED IN GENERAL MEDical care—for organization with overseas interests U. S. citizenship, graduate of class A medical school starting salary $10,000 plus allowances; initial 3 year contractual; subsequent permanent affiliation dependent on qualifications; request reply provide summary of personal and professional background to include military experience. Box 2800 C, % AMA.

EYE, EAR, NOSE AND THROAT SPECIALIST—Board certified preferred and competent to do surgery to function in 500 bed GM&S Dean's Committee Hospital+ with training and research programs, located in a delightful year-around climate; usual V.A. prerequisites. Contact: Director Professional Services, Veterans Administration Hospital, Albuquerque, New Mexico.

INTERNIST OR GENERAL PRACTITIONER — Full medical ward service in a 1000 bed general hospital with residency program and university affiliation; must be citizen and licensed in any state; salary range $5915 to $13,760, strictly according to applicant's experience and educational background; fringe benefits. Apply to: Dr. A. Tomasulo, Director, Professional Services, VA Center, Dayton, Ohio.

FELLOWSHIP VACANCIES IN CHILD PSYCHIATRY—at the Institute for Juvenile Research in Chicago July 1957 or January, 1958; approved for 3rd year residency through Illinois Neuropsychiatric Institute. Requirements: 2 years approved psychiatric training; salary: $3,720 to $4,800 dependent on previous training. Write: Helen R. Beiser, MD, 907 South Wolcott, Chicago 12, Illinois.

WANTED—HOUSE PHYSICIAN: BY 100 BED accredited hospital; salary $300 plus maintenance; must have graduated from approved medical school and have had an approved internship; travel expenses refunded at the end of year of service; position open June 1957. G. N. Wilcox Memorial Hospital, Lihue, Kauai, T. H.

WANTED—BOARD CERTIFIED RADIOLOGIST: 200 bed private general hospital; 100 bed general hospital and 2 clinic groups wish to utilize services; unusual professional opportunity; Montana; excellent income percentage basis; state all qualifications and particulars in 1st letter; early availability preferred. Box C, % AMA.

WANTED — GENERAL PRACTITIONER WHO interested in becoming an associate in a 35 bed hospital privately owned; clientele of 40 years; starting salary $1000 per month; owner desiring to semi-retire; located in mid-western state; wonderful opportunity for the right man. Box 3092 C, % AMA.

The Medical Bureau

900 North Michigan Avenue Chicago

ACADEMIC: (A34) Assoc. prof., OB-GYN; full time.
ASSISTANTS: (C52) By 2 Board surgeons, surg. dept, 14 man group; surg. train. advantag., not req; Minn. (C53) Gen pract, including surg., ob; small town near univ. city, S. C.
ANESTHESIOLOGY: (B60) Dir. dept, new gen. hosp., 200 beds; if Board, $20,000 increasing to $25,000; So.
DERMATOLOGY: (D73) Head dept, important group; oppor. faculty post.
GENERAL PRACTICE: (F92) Ass'n, busy gen. pract; resort town, Fla; $1200 plus % as pract. increases. (F93) Ass'n, 2 GPs; small town, near Madison, Wis; partner oppor. (F94) Ass'n, 7 man group; own clinic bldg; modern, well equipped; $1000 mo. plus %; town 50,000, Calif. (F95) To serve employes, small company, part-time basis; excel. oppor. priv. pract; small town, resort area, Mich; $20,000-$30,000. (F96) Foreign posts, major indus. co; 2-yr contracts, renewable; 3 mo. vacation; substantial sal., Fed. tax free.
INDUSTRIAL MEDICINE: (C71) Ass'n, lge indus. co; altho one exp. indus. med., GP elig; advantag. if exp. atomic energy; town, 50,000; Pac. NW. (C72) Dir. depts indus. med., office & plant employes, pharmaceutical co; NY.
INSURANCE MEDICINE: (X69) Ass't med. dir; major co; N. Eng.
INTERNAL MEDICINE: (H28) Ass'n, Board internists; own clinic bldg; Fla. (H29) Ass'n, 14 man group; city 135,000 near 2 med. school cities; N. Y.; partner oppor. (H30) Chief, dept med., lge group; Calif. (H31) Ass'n 2 Board internists; senior planning early retirement; partner oppor; univ. city, So. (H32) Assn., division of oncology, important clinic affil., 800 bed tch'g hosp; research, tch'g oppor; univ. city, MW.
NEUROSURGERY: (Y42) Ass'n, Board NS, on faculty med. school; oppor. 50-50 partner; E.
OALR: (E15) Oph., ass'n, Board oph; coll. town, immediate drawing area, 100,000; Mich; 1st yr, $18,000; 2d, $24,000; partner oppor. (E16) Oto; ass'n, 32 man group; interesting city outside US; climate delightfully equable; max. 89, min. 54.
OBSTETRICS-GYNECOLOGY: (J46) Head dept, small group founded by Board surg. estab. coll. town, Calif., 31 yrs; partner oppor., after 2d yr. (J47) Ass'n, 34 man group estab. '27; excel. facilities; expansion prog; univ. town, MW.
ORTHOPEDICS: (K94) Ass'n, 37 man group; univ. & resort city, SW. (K95) Ass'n, 15 man group; univ. town, MW; $18,000-$20,000; oppor. succeeding chief upon retirement. (K96) Group ass'n; Calif; min. $15,000.
PATHOLOGY: (L22) Dir. dept, 35 man group; own hosp., 400 beds; res. town, short distances several lge cities; E. (L23) Dir. dept, new gen. hosp; ultra modern; near Chicago; % netting $25-$30,000. (L24) Dir. Dept, new 275 bed hosp, affil. famed group; members on faculty 2 med. schools; So.
PEDIATRICS: (M16) Head dept, 6 man group; nearest ped., 40 miles; lge drawing area; small town, 90 miles, univ. med. center, So. (M17) Ass'n, 20 man group; town 100,000, near univ. city, MW. (M18) Ass'n, 12 man group; expanding; min. $1000; increase 6 mo; partner after 2 yrs; Calif.
P & N: (P76) Dir., psy. team, priv. group; So. $20-$25,000. (P77) Med. neurologist; ass'n Board neurosurgeon; univ. city Pac. NW; partnership.
PUBLIC HEALTH: (Q32) Epidemiologist; foreign operations, major indus co; $18,000 (Fed tax free).
RADIOLOGY: (R14) Assoc. rad; new 250 bed gen. hosp; dept averages 40 cases day; any type contract, min. guarantee, $16,000; coll. town, 150,000, Texas. (R15) Assoc., dept rad., univ. med. school; one with academic interests req; E. (R16) Ass'n, active priv. & hosp. practice; partnership; lge city, Pac. NW.
SURGERY: (U59) Ass'n, Board surg; small group; coll. town, N. Dak.; $1000 plus %; equal partner, 2d yr. (U60) Ass't by 2 Board surgeons, on faculty, med. school; MW. (U61) Thoracic surg; full time hosp. post, So.
TUBERCULOSIS: (V11) Dir., outpatient dept, 200 bed Tbc hosp; $10,000-$13,000 plus home, utilities; MW.
UROLOGY: (W67) Dir. urol. serv. within dept of surg., univ. hosp., organize & dir. research prog; full time; W.

Please send for our Analysis Form.

Burneice Larson DIRECTOR

WANTED—BOARD OR ELIGIBLE OTOLARYNGOLOgist or EENT; for 15 man, well-established group located in excellent hospital; junior partnership after 2 years' good salary; group pays moving expenses, also travel expenses, for applicants invited for personal interview. Apply: Dr. Charles E. Holzer, Holzer Clinic, Gallipolis, Ohio. C

ASSISTANTSHIP IN SURGERY—MIDWEST CLINIC has opening for doctor interested in general surgery including urology and proctology on an assistantship basis for 1 or 2 years; a splendid opportunity for candidates interested in additional surgical training and experience; salary $500 per month. Box 3204 C, % AMA.

WANTED—PEDIATRICIAN; TO JOIN 20 MAN GROUP composed of Board diplomates; formerly instructors and assistant professors in university medical schools; Mid-West; new air-conditioned clinic building; adequate hospital facilities; vacations, and study leave with pay, along with other advantages; well-trained outstanding man required. Box 3206 C, % AMA.

WANTED—FULL-TIME SURGEON; INTERESTED IN instructing and training general surgical residents for university medical school; must be citizen, Board certified or Board eligible; salary based on qualifications and experience up to Veterans Administration ceiling. Apply: Medical Director, Veterans Administration Hospital+, Wichita, Kansas. C

ORTHOPEDIC SURGEON WANTED—TO JOIN GROUP in accredited general hospital+ and diagnostic clinic; Finger Lakes area New York State; excellent salary, bonus and retirement plan. Apply: Dr. B. A. Watson, Superintendent, Clifton Springs Sanitarium and Clinic, Clifton Springs, New York. C

STAFF PHYSICIAN—FOR CALIFORNIA APPROVED accredited bicounty hospital+; pulmonary diseases (219 beds), rehabilitation chronic illness (30 beds); starting salary $600 monthly. Includes furnished modern home for family; must be eligible California licensure. Write: Medical Director, Tulare-Kings Counties Hospital, Springville, California. C

GENERAL PRACTITIONER — IMMEDIATE OPENing available with medical group 20 miles north of Pittsburgh; excellent educational program; rotation of evenings and weekends; study and annual leave; no investment required; net annual income $12,000-$15,000 depending on training and experience. Box 344, Russelton, Pennsylvania. C

WANTED—PHYSICIAN WITH PENNSYLVANIA LIcense; to act as house physician and do part time practice with group; operating small general hospital in western Pennsylvania; salary $12,000 plus portion of practice; opportunity full time practice in future. Apply: Joseph S. Johnston, Mercer Cottage Hospital, Mercer, Pennsylvania. C

PSYCHIATRISTS WANTED — SALARY $7570-$12,685 depending upon qualifications; 25% additional if Board certified (not to exceed $13,760); approved 3 years psychiatric residency in conjunction with Northwestern University; hourly commuting distance Chicago; citizenship required. Write: Manager, Veterans Administration Hospital,+ Downey, Illinois. C

PATHOLOGIST—DIRECTOR OF LABORATORY; qualified in pathology and clinical pathology; must be citizen and licensed in any state; salary range from $6390 to $13,760 according to applicant's past experience and educational background; fringe benefits. Apply to: Manager, VA Hospital, Muskogee, Oklahoma. C

INTERNIST OR GENERAL PRACTITIONER — FOR medical service in a 382 bed general hospital; must be citizen and licensed in any state; salary range from $6390 to $13,760 according to applicant's past experience and educational background; fringe benefits. Apply to: Manager, VA Hospital, Muskogee, Oklahoma. C

GENERAL PRACTITIONER WANTED—SEPTEMBER 1st or January 1st; to take over practice of physician leaving to specialize; mid-west location; gross income 1956 $48,000; fully-equipped office available, also home if desired; one other general practitioner in town; hospital facilities available. Box 3114 C, % AMA.

WANTED — LICENSED PHYSICIANS FOR STATE mental hospital; good location and climate; training unessential; housing available at nominal cost; $10,000 and up depending on qualifications. Contact: P. L. Hays, Superintendent, Eastern State Hospital, Vinita, Oklahoma. C

WANTED—PSYCHIATRIST; TO WORK IN SMALL psychiatric clinic; Board eligible preferred but not required; salary $15,000 a year. Box 3211 C, % AMA.

(Continued on page 66)

now you will want to use

Tryptar®

The Armour Laboratories brand of Purified Crystalline Trypsin

more widely and more often

in your practice

▸ because the price has been greatly decreased

(now practical to use in all patients who need it)

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(distilled water or normal saline may be the diluent)

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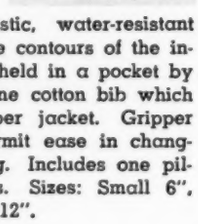
LYMPHEDEMA Arm Sleeve

This surgical appliance exhibits good results in cases following radical mastectomy. Completely adjustable and comfortable to wear, it is loosened and tightened with a lacer. Elastic band prevents sleeve from falling at shoulder . . . detachable mitten eases laundering. Made for right and left arms in two lengths . . . which fit most cases.

ABDUCTION PILLOW For Treatment of Congenital Hip Dislocation



Camp's new abduction pillow splint is used for treatment of congenital hip dislocation and acetabular dysplasia at home by the progressive abduction method. The plastic, water-resistant pillow molds to the contours of the infant's legs and is held in a pocket by the soft grey Dorene cotton bib which serves as a romper jacket. Gripper snap fasteners permit ease in changing and laundering. Includes one pillow and two bibs. Sizes: Small 6", Medium 9", Large 12".

Remember . . . CAMP authorized dealers have professional fitting services

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JACKSON, MICHIGAN

TONICS AND SEDATIVES *(Continued)*

"Dear," sighed an enraptured young man, "when I think that tomorrow is your birthday I realize that a year ago I didn't even know you."

"Sweety," murmured the girl, "let's not talk about the past. Let's talk about my present."

♣

quotes of the week

Give a woman an inch and she thinks she's a ruler.

♣

A woman's mind is cleaner than a man's —she changes it oftener.

♣

Called upon for a few words of condolence for the death of a man he heartily detested, Voltaire at first refused. He was finally persuaded and penned this brief but revealing statement:

"I have just been informed that Messr. ——— is dead. He was a sturdy patriot, a gifted writer, a loyal friend, and an affectionate husband and father—provided he is really dead."

♣

"I have had a wonderful evening," said Groucho Marx to his hostess leaving a dull party, "but this wasn't it."

♣

"You've been a pretty sick man," said the doctor. "In fact, I must say it was only your strong constitution that pulled you through."

"Good," said the patient, "I hope you remember that when you come to make out your bill."

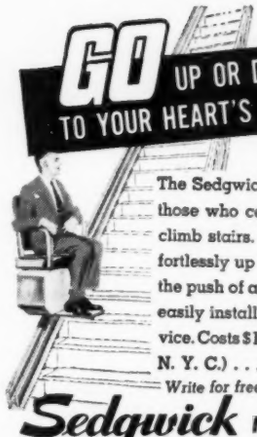
♣

The teacher asked a little boy, "If your mother gave you a large apple and a small one and told you to give one to your brother, which would you give him?"

The little boy asked, "Do you mean my little brother or my big brother?"

—D. D.

GO UP OR DOWN... TO YOUR HEART'S CONTENT



The Sedgwick Stair-Chair® serves those who cannot or should not climb stairs. You ride safely, effortlessly up or down, simply by the push of a button. Time-tested, easily installed. Nation-wide service. Costs $1400 or less (installed N. Y. C.) . . . and well worth it!

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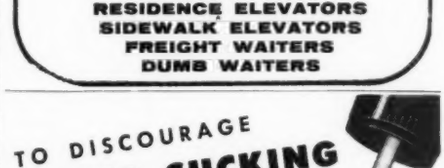

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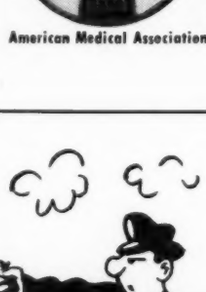

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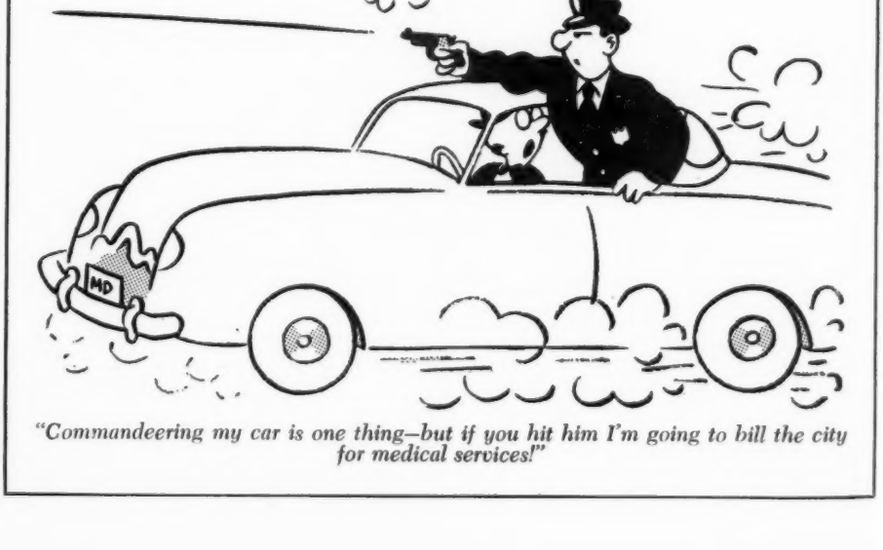

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(Continued on page 73)

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WASHINGTON FEATURE

SPECIAL MONTHLY REPORT FROM A. M. A. WASHINGTON OFFICE

A short time ago Sen. James Murray of Montana and Rep. John Dingell of Michigan, both liberal Democrats, introduced identical bills to set up a compulsory system of national health insurance to be tied in with social security. This did not create a sensation in Washington. In a sense it was routine, and it certainly was no surprise.

But no one, particularly if he is at all familiar with social legislation, would regard the subject matter too lightly. What the senator and the representative are asking Congress to consider is the socialization of medicine—something the American medical profession has fought for half a century. Historians and sociologists generally agree that, if this is not the first step toward complete socialization of a country, it is an almost irrevocable one. Furthermore, there is just no way of ever completely and finally putting this specter aside. On down all the years ahead politicians and social planners will be pushing the idea when they think the time is ripe. Some of these peope will be sincerely devoted to what they regard as social progress; others will be out-and-out opportunistic charlatans. But, whatever their true motives, they will be with us.

Some people will swallow small helpings of socialism if this does not become a steady diet, possibly not realizing what they are eating. Others do not want any part of socialism. Neither of these groups naturally sees anything cheerful in the prospect of constant pressure from the left for a compulsory government medical program. But, while there is nothing reassuring for them in the long-range picture, the immediate developments are no cause for panic. Even the sponsors of the present bill do not expect action of any kind on it this session: for the time, they are just standing up in public and announcing, "We're still here, folks."

They were here also 10 years ago, when they came out in the open and started their determined drive. It did not succeed, but it was a long contest and clearly the action was merely a defeat, not a surrender.

Looking back over these years, several things become clear. For one thing, the federal government's role in health and medicine has expanded at an almost fantastic rate. For another, the mechanism for private payment of private medical care has not broken down, as forecast in 1947, but instead is remarkably effective, and getting better all the time. Then, in 1947, there were charges and countercharges, predictions and counterpredictions about what would happen to the country if it did or did not adopt socialized medicine. It might be proper, now that we can replace many of those guesses with facts, to see just what has happened.

When we can start looking back from Senator Murray and Mr. Dingell, the regression is along a familiar trail. Now Senator Murray is one of the oldest men in the Senate; then, 10 years younger, he was an even more articulate, vigorous fighter. Mr. Dingell is the son of the congressman who, with the late Senator Wagner, co-sponsored the original bill. He is one of the young men of the House, serious, scholarly in appearance; his qualifications for legislative combat have hardly been tested.

The 1947-1949 Hearings

Although hearings had been held previously, and the legislation had long been before Congress, the real battle over the Wagner-Murray-Dingell bill opened explosively on May 21, 1947, at a hearing before the health subcommittee of the Senate Labor and Welfare Committee. The hearing was on the late Senator Taft's bill, proposed as an alternative to the Wagner-Murray-Dingell measure. The issue was grave, and tempers were strained.

Those present that day recall that the room was full of conflict, and that senatorial courtesy went out the window. Unfortunately the congressional record has no sound track to preserve such incidents in their full flavor. The following partial transcript gives some idea of what took place, even though the words were edited later by cool heads. The hearing had hardly opened when this occurred:

Senator Taft: "Of course, this bill and the so-called Murray-Wagner-Dingell bill are just two completely opposite and conflicting plans, and what the committee ultimately has to decide is whether they want one or the other.

"We had hearings last year which were predominantly for the purpose of permitting the advocates of the Murray-Wagner-Dingell bill to appear. The opponents also appeared but the proponents of the Murray-Wagner-Dingell bill had certainly a most comprehensive presentation of their point of view.

"What I desire, as a sponsor of this bill, is that this committee now hear some of the sponsors of this kind of medical plan instead of the other plan.

"Of course, I think they were entitled to be heard first on theirs last year, presenting their case completely, in full, and no hearings being held on this bill except just at the end."

Senator Murray: "Senator, permit me to interrupt you."

Senator Taft: "Yes."

Senator Murray: "Of course, Senator, you appreciate the fact that all through those hearings the witnesses were interspersed. Whenever the opposition asked for witnesses to be heard, they were heard right along."

Senator Taft: "It was predominantly set up to put over the Wagner-Murray-Dingell bill as a piece of propaganda from the beginning."

Senator Murray: "But, the majority of the———"

Senator Taft (interposing): "You had your case; we have our case. I have been with this committee for a long time and the chairman of this committee has used the committee as a propaganda agency to put over the things that the chairman wanted."

Senator Murray: "I wish to state that is utterly false."

Senator Taft: "Well, under present conditions———"

Senator Murray (interposing): "That is just in line with your attitude all the way along."

Ultimately the hearing turned onto a less acrimonious course. That same day Drs. R. L. Sensenich and E. J. McCormick, both later to become presidents of the American Medical Association, testified. The hearings rolled on for weeks and weeks in 1947, and in later years the verbal barrages were resumed. By now,

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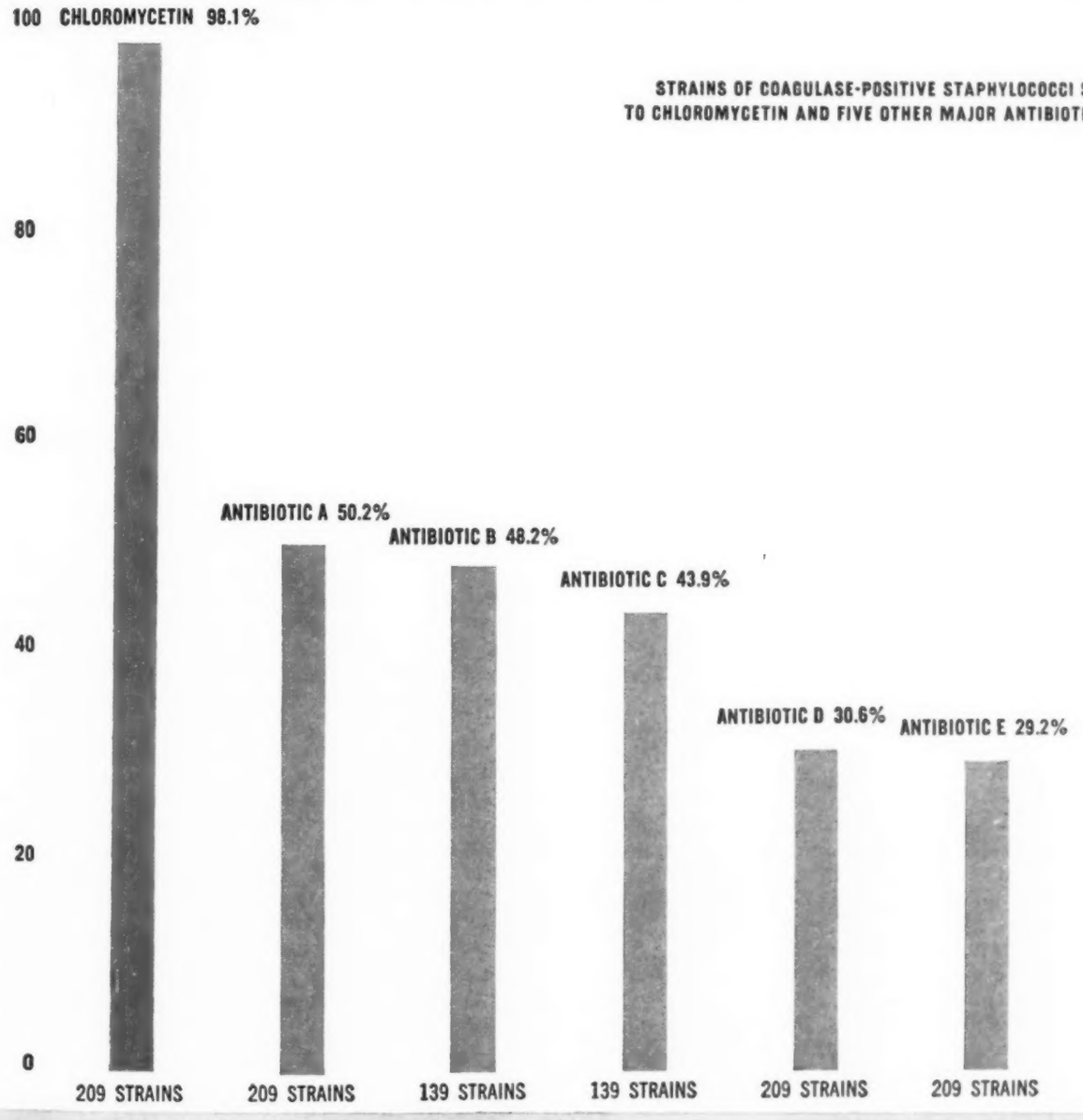

*This graph is adapted from Spink.[2]

the A. M. A. was deep in this struggle to stop compulsory health insurance, a battle that was not broken off until 1949. It can be resumed any year.

A number of witnesses represented the A. M. A. and other medical organizations at the hearings. A conspicuous example of their logical approach is this from Dr. Louis Bauer, who also was to become an Association President, on Wed., May 25, 1949:

"From what I have said, it will be obvious that any plan for Federal participation in the handling of the problems of medical care that lodges primary initiative and control in Washington, that contains uniform and compulsory features on a Nationwide basis, and that lays a direct Federal tax on citizens generally to finance the program is unacceptable in principle. Such plans concentrate further power in the Central Government, they absorb in Washington functions much better retained at the local level, and they greatly enhance the over-all cost of providing health services. Most important of all, they would lead to a widespread and serious deterioration of the quality of medical care."

Now, for some of the specifics. In addition to socializing the economic machinery of medicine, sponsors of the legislation in 1947 would have expanded federal research, built more hospitals, and in many other ways added to the federal medical effort.

Course of Voluntary Health Insurance

At the 1947 hearings Senator Murray had inserted in the record several "Fact Sheets on Medical Care." These documents offered many statistics designed to show that the nation's medical care was inadequate then, that it was getting worse, that a complete collapse was in prospect. One of the points they made was that in 1945 no more than 35 million people had any kind of health insurance.

Figures for 1947 obviously were not available at that time, but they are now. It might be better, for comparison purposes, to use these later statistics. Here is that story, with both sets of figures coming from President Eisenhower's economic report to Congress last January:

Hospitalization insurance: 52 million covered in 1947; at the end of 1956 the total number covered was 112 million, or an increase of more than 100%.

Surgical expense: 26 million covered in 1947; at the end of 1956 the total was 96 million, or an increase of almost 300%.

Regular medical expense: about 9 million covered in 1947; at the end of 1956 the total was 63 million, an increase of about 600%.

Major medical expense: virtually no coverage in 1947; about 100,000 covered in 1951; coverage now in excess of 10 million, an astronomical percentage increase in six years.

Prior to 1947 labor already had been using economists and social welfare specialists extensively in collective bargaining, but the socialized medicine hearings saw them move into the field of nation legislation. One of these was Nelson Cruikshank, social security director for the American Federation of Labor. He estimated for the Senate committee that no more than a million and a quarter AFL workers were then covered by any kind of health insurance. Double that to take in the CIO, and the total would have been something like 3 million covered in the two big unions.

There are various estimates of the growth of health insurance among union members in the last 10 years. The AFL-CIO says it has no figures later than the end of 1954. Taking these—and you can assume there have been increases in the past two years—the story is this:

Total workers with hospitalization insurance (AFL-CIO and other), 31,300,000, plus 44,300,000 dependents.

Total workers with surgical coverage insurance, 28,300,000, and 39 million dependents.

Total workers with medical care insurance, 17,300,000, and 21,400,000 dependents.

While, in a situation like this, percentage increase figures are meaningless, at least it is apparent that labor union members, like most other people, are rapidly moving in under the protection of voluntary health insurance. While some of labor's national leaders continue to preach socialized medicine as the only solution, individual unions and workers by the millions are working out their medical care problems in a different way.

Statistics generally are dull, but these quoted bove suggest that the growth of voluntary health insurance has been at a pace that neither side possibly could have predicted during the bitter legislative struggle over compulsory health insurance 10 years ago. There is room for improvement in extent of coverage, in extent of benefits, in many other aspects of health insurance—but great improvements have been made, and more are on their way.

Hospital Construction

Originally, proponents of the Wagner-Murray-Dingell bill argued that the best way to get hospitals built was to pass their omnibus socialized medicine measure, with its hospital grants. Instead, the Hill-Burton hospital program was enacted in 1947 and is still in operation. This provides federal grants to pay part of the cost of hospitals; it requires the local community to raise from one-third to two-thirds of the money, and once the building is up the U. S. government withdraws from the picture.

Hill-Burton has not solved all the problems, but it has this story to tell:

A total of $937,100,000 in federal money—just under a billion dollars—has been pumped into American hospitals since 1947. That is just one part of the picture. In 1947 a total of 195 million dollars—public and governmental—was spent on hospital construction. The next year—with the impetus of Hill-Burton—this annual hospital investment was more than doubled. Two years later, by 1950, the total again had been doubled. Over the last few years there has been a slight slackening off in the rate, but the significant fact is this, during the last 10 years about six and one-half billions of dollars—private and governmental—has been spent in hospital construction.

What does this prove? If nothing else it proves that billions of dollars has been raised for hundreds of thousands of hospital beds by private organizations and the federal government—and without a program of socialized medicine.

Whether the Hill-Burton program has been all that was expected of it, whether it has moved ahead too rapidly without sufficient survey of the actual need, whether local communities now are not depending too much on U. S. help to build hospitals—these are questions that still have not been answered to the satisfaction of all in the medical profession.

Medical Research

The 1947 testimony of Senator Murray bemoaned the fact that only 20 million dollars a year was being spent by all parties—government and private—on medical research at that time. If this is an accurate state-

(Continued on page 78)

(Continued from page 73)

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(Continued on page 83)

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ment, that certainly was nothing for anyone to be proud of, particularly when, as the senator noted, the U. S. Department of Agriculture alone was spending about 50% more than that on diseases of plants and animals.

Assuming that the senator's figures were about right, what has happened since 1947 in medical research spending? Well, a great deal. Federal medical research spending has grown astronomically, reaching, by now, a total that the socialized medicine advocates themselves might not have been able to achieve had they been in control.

For the current (1957) fiscal year, the federal government is spending almost a quarter of a billion dollars on research ($216,508,000) through the National Institutes of Health alone. The U. S. is spending additional research millions through the Veterans Administration, in the armed services, and in other agencies. Indications are that 100 million dollars more is being spent privately for medical research this year.

Without the stimulation of socialized medicine, which some Americans thought essential in 1947, the country thus has increased its spending for medical research something like 1,500%. It is reasonable to ask whether socialized medicine could have equaled that record.

The growth of the individual institutes is worth brief attention. For some examples, the U. S. Cancer Institute's appropriations have increased from $1,800,000 in 1947 to 48 million dollars now; the Institute of Mental Health, founded in 1948, has moved up from 4 million to 35 million dollars; and the Heart Institute, founded in 1950, has moved from $1,700,000 to 33 million dollars.

How much has the federal government stimulated outside research? On that there are some sound statistics. In 1947 the institutes awarded 291 grants; this year the total likely will be well over 10,000. Also, within the institutes the employee rolls have gone up, from 1;114 in 1947 to 5,895 now, with 810 of the institutes' staffs holding doctoral degrees.

These advances under a free medical economy have been noted with some interest—and possibly a certain amount of despair—by those who want to put over socialized medicine.

In reintroducing their bill, Senator Murray and Mr. Dingell have dropped out whole sections—those calling for programs that already are firmly on the statute books. Included in those deleted parts are provisions for hospital construction grants and for expanded medical research. Because the U. S. Public Health Service already has the money to help in education of health personnel, to aid distressed areas, and to help states do more in maternal and child health, these sections of the bill also are eliminated.

The new legislation is stripped down to plain socialized medicine—compulsory payroll deductions to finance compulsory national health insurance. The sponsors of socialized medicine thus are admitting we are doing all right now in building hospitals, in stepping up our medical research, in public health work, in training of health workers. But still we need socialized medicine—they say. Despite increases of 200, 300, and 600% in coverage in the last 10 years, voluntary health insurance is not moving fast enough to suit them. They are, of course, entitled to their opinion.

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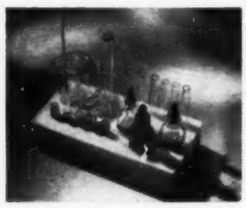

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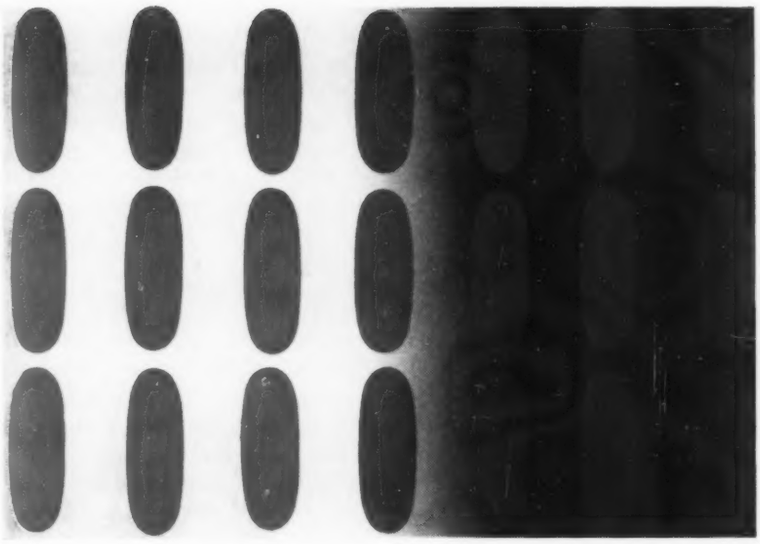

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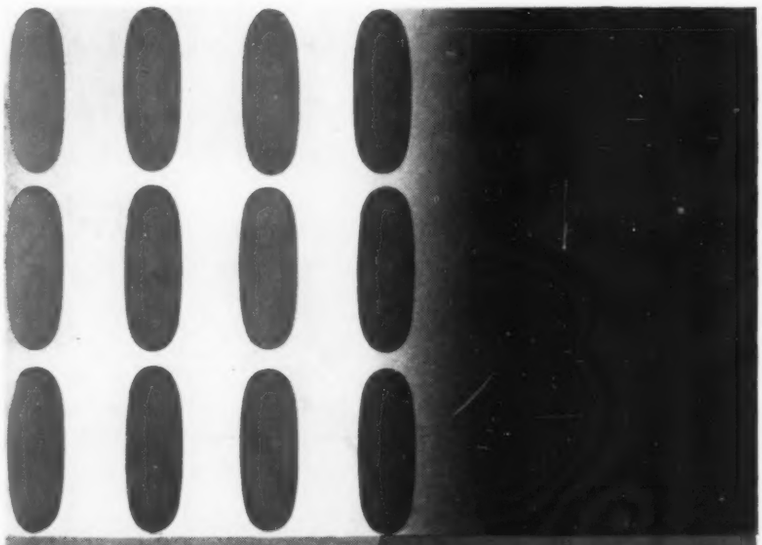

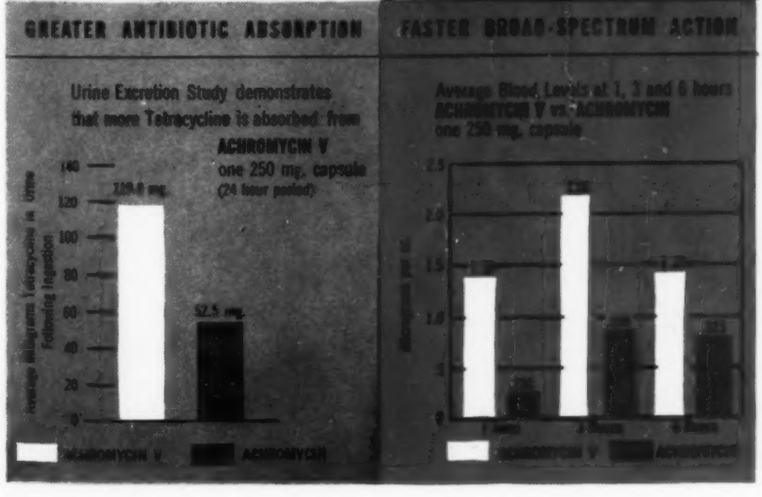

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PEARL RIVER, NEW YORK

The Bright Side

by E. K. H.

Ned Calmer, the CBS correspondent, recalls this true story of a young Oklahoma bride who decided to take the family car and go for a spin one afternoon.

Within a few seconds all bedlam broke loose. The car went out of control, hit a post, narrowly missed three pedestrians, tore off a corner of a drug store breaking the window to bits, and finally crashed into the local fire department.

The woman was arrested and, to top it all off, was found to be driving without a license. Her husband was called and in his bride's presence was given a complete rundown of the catastrophe.

When the grim recital ended, he stared at his wife unbelievingly.

"Gosh, Ellen," he exclaimed, "I didn't even know you could drive!"

❖

"Every man loves his native land," says Hollywood director Mike Curtiz, "whether he was born there or not."

❖

From *The Montrealer* comes this tale of a teen-ager who had been ordered to bed early because of a run of late parties.

Of course the telephone rang for her the moment she hit the pillow, but her father took the call, which was from one of her boy friends. At breakfast the next morning he gave his daughter the message.

"You surely didn't tell him I had gone to bed at *that* hour!" she demanded anxiously.

"Of course I did."

"Oh!" wailed the outraged femme fatale. "That's the meanest thing I've ever heard of! Everybody'll think I *have* to go to bed at nine o'clock, like a mere child!"

"Now, now, don't worry," smiled her father. "I told him you had a terrible hangover."

❖

We've just been told about an out-of-work actor who was too broke to invite girls up to his flat to see his etchings. He now asks them up to see the handwriting on the wall.

❖

A well-known star in Hollywood says she believes in early marriages. She always gets married before lunch.

❖

"February," agrees Herb Shriner, "is about the coldest month of the year everywhere."

"Especially in my home town," says Herb. "Why, sometimes the temperature goes way down to 30 below—and that's where you really feel it."

A self-assured collegian entered one of the larger Madison Avenue advertising firms and asked to see the head of personnel. While waiting for the receptionist to track the man down, the ivy-leaguer fell into conversation with a callow looking pre-teen office boy.

"By the way, son," he said, "do you know of any opening around here for a gifted young college grad?"

"I know of one, mister," snapped the office boy, "if they don't hurry up with the $2 raise they promised me!"

❖

Television isn't all entertainment—it has its practical side, too. Take the case of a night worker who came home one morning hungry for his regular large breakfast.

He found eggs, flour, butter, and other ingredients spread out on a table placed directly in front of the TV set. Propped up against the mixing bowl was a note.

"Henry," it said, "I have gone shopping. The recipe for your breakfast will be demonstrated on Channel 12 at nine o'clock."

❖

At a party one night, Oscar Levant, the composer and pianist, who is not an even-tempered person at best, was being annoyed by a woman who chattered constantly during his playing.

When he finished, she rushed over to him enthusiastically. "Oh, Mr. Levant," she gushed, "that was perfectly lovely! Do tell me something about yourself. Why did you take up the piano?"

"Because," said Levant sourly, "my beer glass kept falling off the violin!"

"I'm sure you'd feel better if you got some blood in your alcohol stream."

Maximow & Bloom's

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Many eminent teachers and clinicians have reviewed, criticized and made suggestions all up and down the line to insure inclusion of only the most modern concepts and understanding. Scores of new electron micrographs have been added to throw new visual light on current problems. The drawings, photographs, micrographs, etc. now total 1082 with 265 in color—comprising one of the most comprehensive and illuminating collections of histologic illustrations ever gathered together and published in one unified source.

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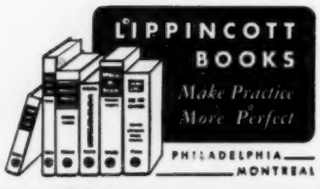

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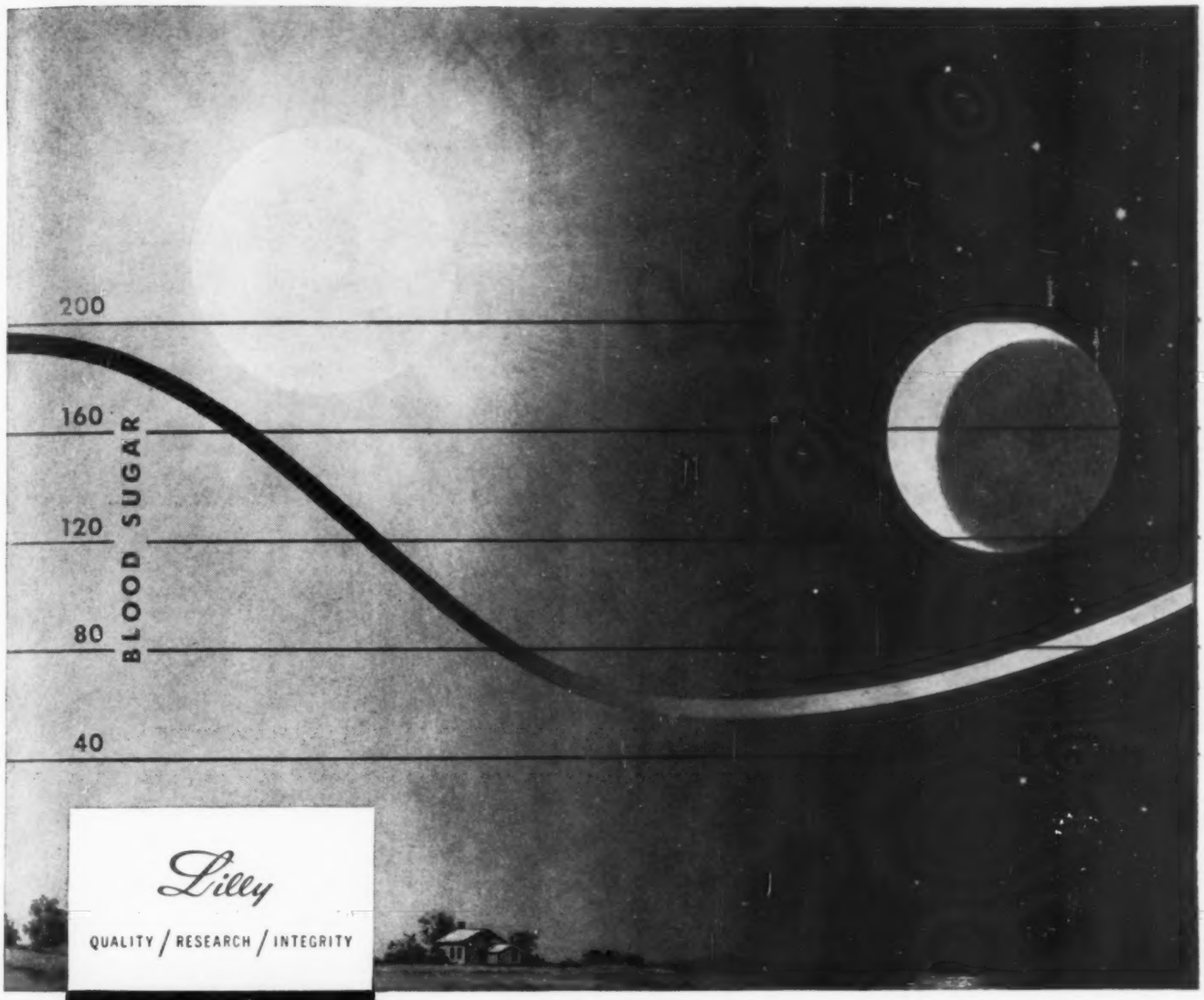

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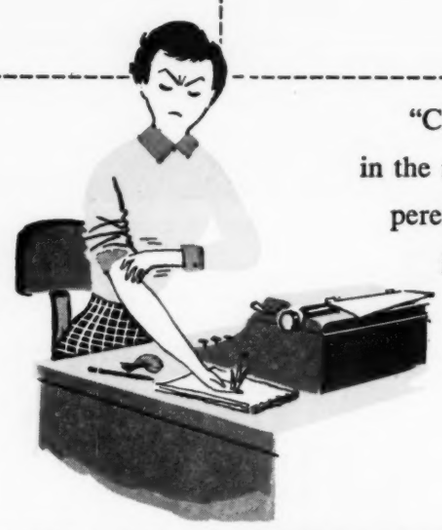

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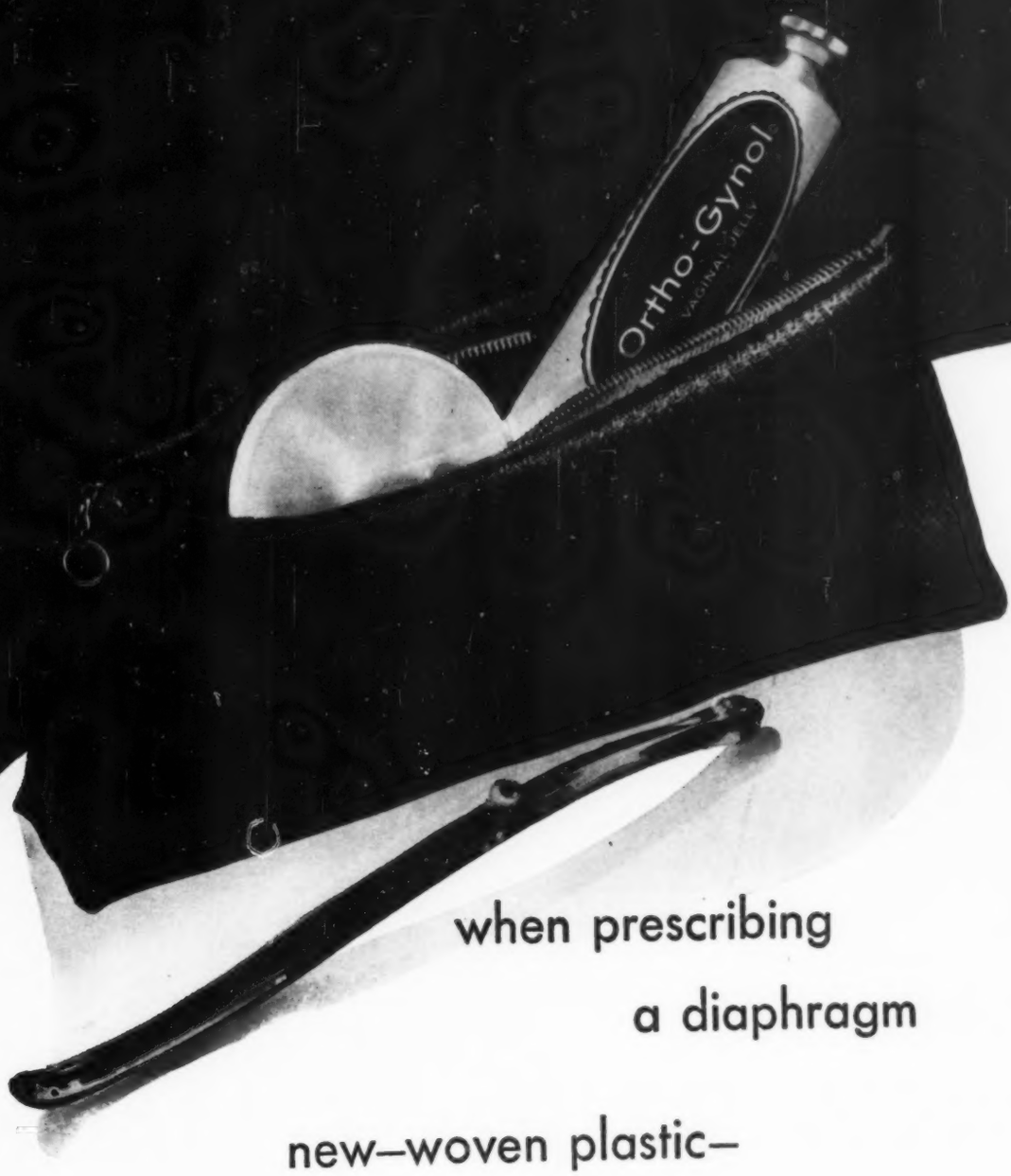
1. Garat, B. R., Landa, C. R., Rossi Richeri, O. F., and Tracchia, R. O.: J. Allergy *27*:57 (Jan.) 1956.
2. Beale, H. D., Rawling, F. F. A., and Figley, K. D.: J. Allergy *25*:521 (Nov.) 1954
3. Johnson, H. J., Jr.: Am. Pract. & Digest. Treat. *5*:862 (Nov.) 1954.



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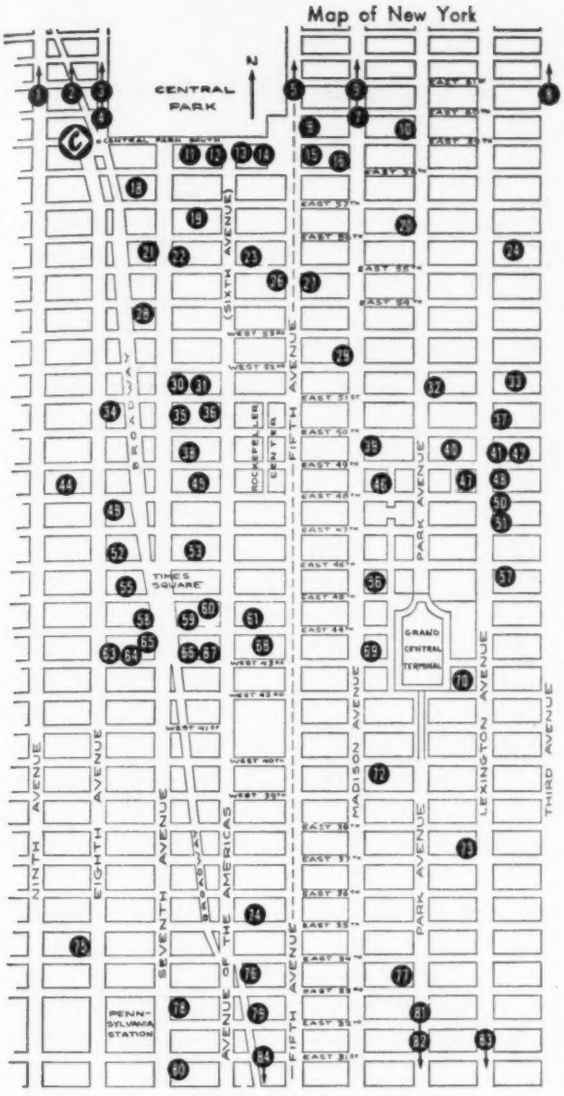

See list on facing page

make your hotel reservations now

All reservations for New York hotels listed should be cleared through the A.M.A. Subcommittee on Hotels before May 25, 1957. Use the form below and mark your calendar so that you'll be in New York June 3 through June 7, 1957. By taking a few moments now, you will assure yourself of a hotel reservation and save much time at the registration window. Those who register now will receive an admission card by mail. The coliseum is on Columbus Circle—at 8th Ave. and 58th St.

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Subcommittee on Hotels
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.....Suite (parlor and bedroom) for.....person(s). Rate $.....

Date Arriving New York..... hour .....A.M. P.M. Leaving.....

Rooms will be occupied by: *(Please attach list of additional names if you do not have sufficient space here. Also list ages of children, if any.) Print or type*

Name	Street Address	City	Zone	State

If you are a technical exhibitor, be sure to give names of firm and individuals to occupy room or rooms reserved.

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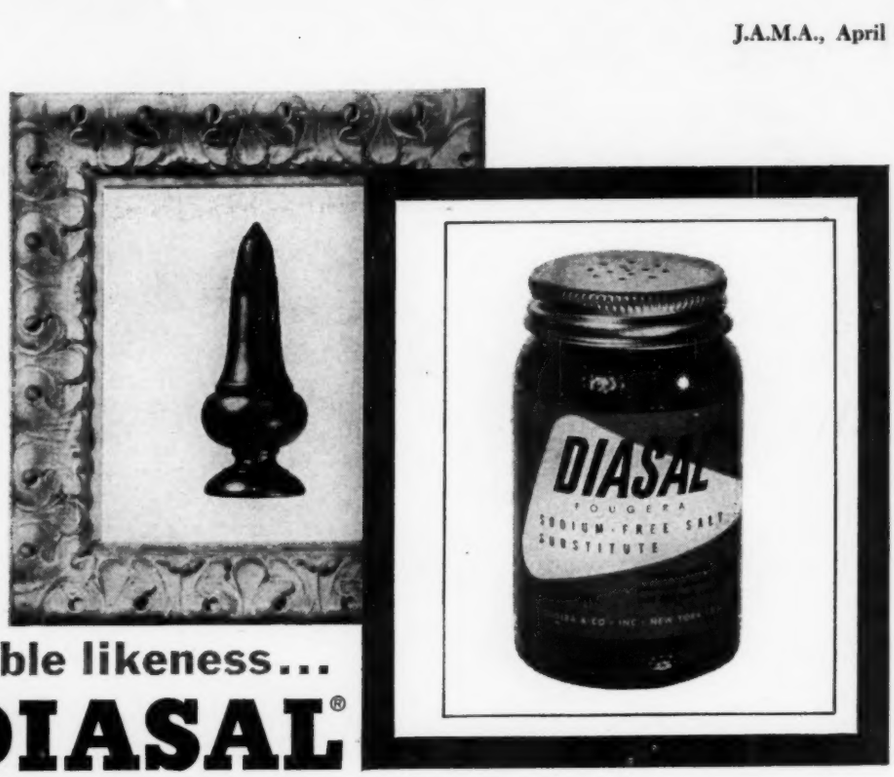
Mailing Address.....

City.....*Zone*.....*State*.....



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You'll find her somewhere in the waiting room. She seats herself according to whim—even on the floor! Usually has a bag of peanuts, chewing gum, and a cheese sandwich to keep her company. She shares the crumbs with the janitor who sweeps your office floors. Says she always takes extra good care of her health. Pain, ache, or minor cut, she takes a pill immediately . . . any pill!

Frequently makes a full course meal from pills alone. She doesn't want you to do anything about her present complaint—just wants advice where the remedy can be purchased at a bargain. You've never met her before, but watch out . . . she needs no provocation for waving a mal-practice warrant before you. In leaving, she opens the door herself—wouldn't think of allowing you this courtesy.

because **Alone:** Serpasil successfully reduces blood pressure, slowly and safely, in about 70 per cent of cases of mild to moderate hypertension.[1]

because **As a "primer":** Serpasil may be advantageously used to begin antihypertensive therapy, however severe the case, since it gently adjusts the patient to the physiologic setting of lower pressure.

because **As a "background" agent throughout other therapy:** Serpasil permits lower dosage of the more potent antihypertensives needed for refractory cases, thus minimizing the incidence and severity of side effects.

1. Cean, J. P., McAlpine, J. C., and Boone, J. A.: J. South Carolina M. A. 61:417 (Dec.) 1965.

SUPPLIED: TABLETS, 4 mg. (scored), 2 mg. (scored), 1 mg. (scored), 0.25 mg. (scored) and 0.1 mg. ELIXIRS, 1 mg. and 0.2 mg. Serpasil per 4-ml. teaspoon. PARENTERAL SOLUTION: AMPULS, 2 ml., 2.5 mg. Serpasil per ml. MULTIPLE-DOSE VIALS, 10 ml., 2.5 mg. Serpasil per ml.

CIBA SUMMIT, N. J.

IN HYPERTENSION

asthmatics on

AMINET®

AMINOPHYLLINE WITH PENTOBARBITAL

suppositories with nonreactive base

are grateful patients

because they obtain prompt and prolonged relief

The unique base of AMINET Suppositories always releases a full therapeutic dose because it melts promptly at body temperature without ever forming hard, nonmelting shells. With AMINET, your asthmatics are not subjected to the hazards of intravenous injection, the gastric upsets of oral aminophylline, or the jitteriness and tachycardia of adrenergics.

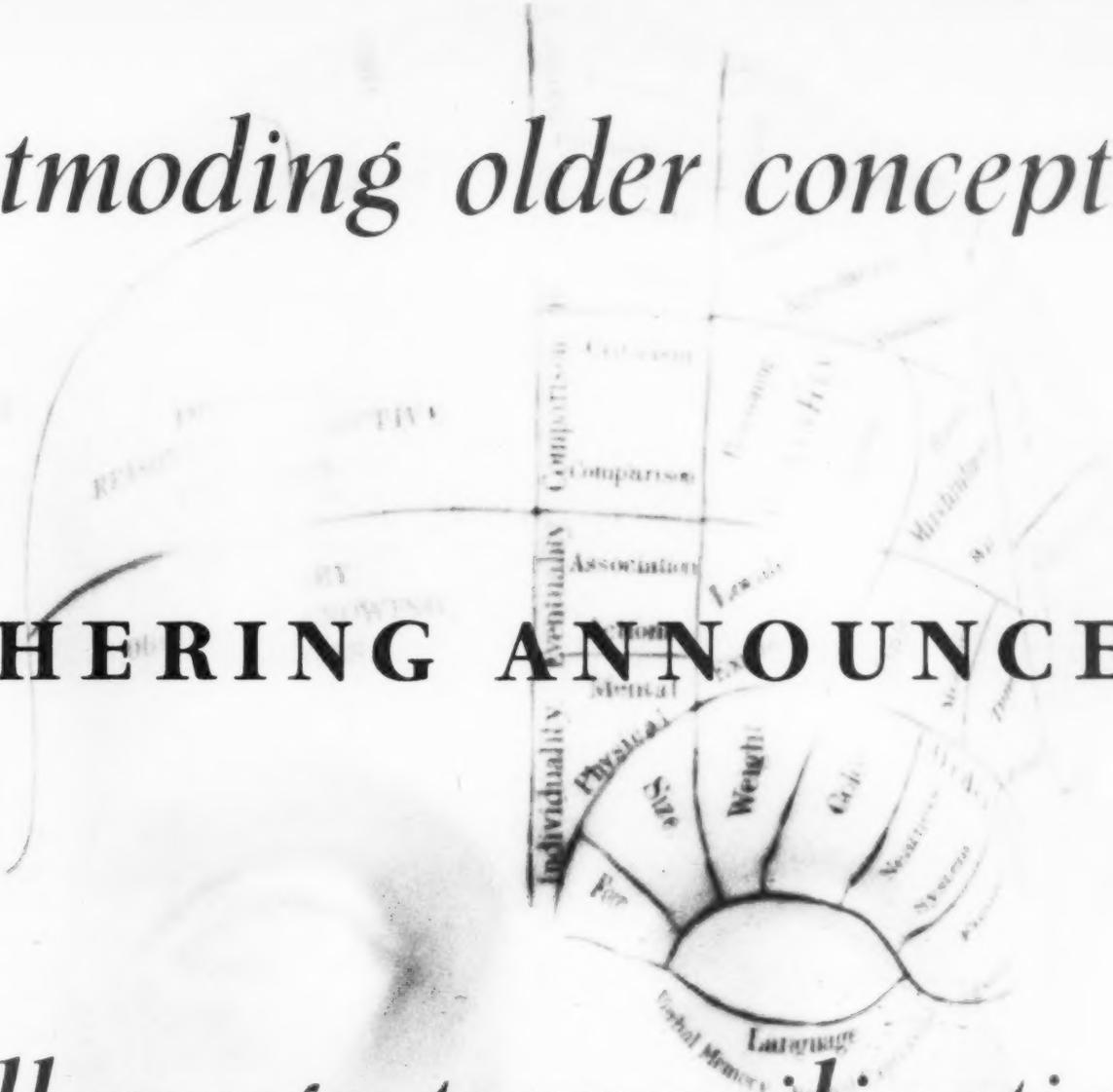
Prescribe in boxes of 12: Full Strength AMINET Suppositories—aminophylline 0.5 Gm. (7½ gr.), pentobarbital sodium 0.1 Gm. (1½ gr.), benzocaine 0.06 Gm. (1 gr.). Also available: Half Strength AMINET Suppositories and plain Aminophylline Suppositories.

AMES COMPANY, INC.

Elkhart, Indiana

21057

outmoding older concepts



SCHERING ANNOUNCES

full-range tranquilization

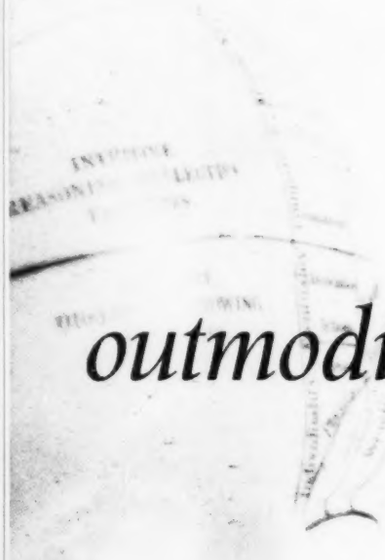
FOR AGITATED HOSPITALIZED PSYCHOTICS • AMBULATORY PSYCHONEUROTICS

ANXIETY AND TENSION STATES

Schering Announces

Trilafon

(pronounced Tril'-a-fon) perphenazine



outmoding older concepts

IN SEVERE PSYCHOSES,

age-old methods of managing hospitalized patients with heavy sedation or physical restraints have been largely supplanted by the early tranquilizers. Certain of the latter agents in turn are due to be superseded by TRILAFON, a new tranquilizing agent which offers greater potency combined with increased flexibility and an adequate margin of safety in the recommended dosage ranges.

FULL-RANGE TRANQUILIZATION

in hospitalized psychotics

ADVANTAGES IN AGITATED PSYCHOTICS

potency up 5-fold over chlorpromazine[1]

jaundice notably infrequent in studies to date[1]

virtual freedom from significant hypotension[1,2]

skin photosensitivity not observed[1]

skin rashes and nasal congestion uncommon[1,2]

unexcelled as a potent antiemetic

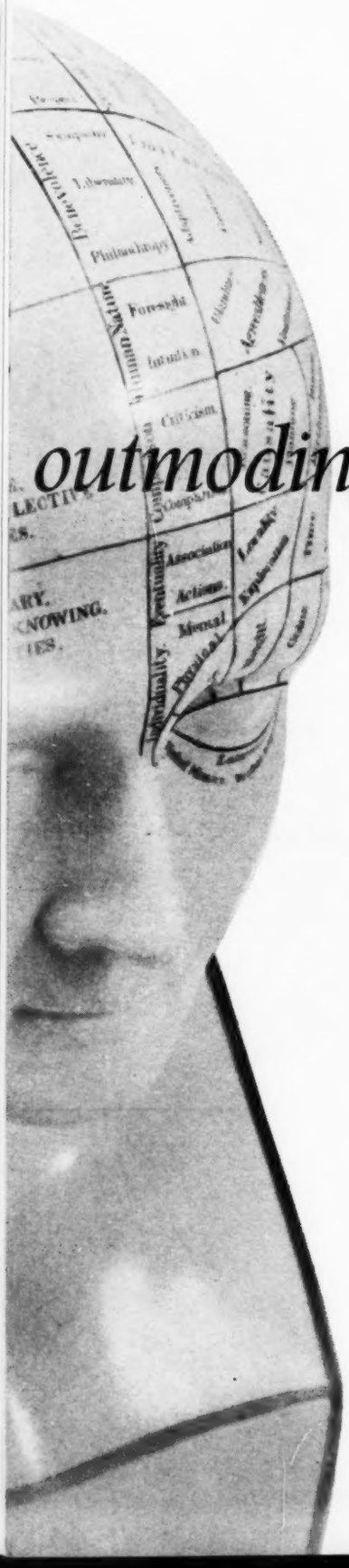
dosage range: Dosage must be individualized. Depending upon the severity of symptoms and the individual response, the usual dosage range is 8 to 16 mg. two to four times daily. Total daily dose of 64 mg. should not be exceeded. It is very important to employ the lowest effective dose since extrapyramidal symptoms increase in frequency and severity with increased dosage. Refer to Schering literature for specific information regarding dosage, side effects, precautions and contraindications.

TRILAFON Tablets: 2, 4 and 8 mg., bottles of 50 and 500.
TRILAFON Tablets: 16 mg., bottle of 500.

1. Compilation of investigative studies, Schering Corporation.
2. Ayd, F. J., Jr.: J. Am. Geriatrics Soc. 5:1, 1957.

Schering

ANNOUNCING...FULL·R



Trilafon

(pronounced Tril'-a-fon) **perphenazine**

outmoding older concepts

IN AMBULATORY PSYCHONEUROTICS

treatment was formerly limited to sedation.
Unfortunately these patients fall into a middle range of severity
where some tranquilizers have not been uniformly effective.
In this area of moderate psychic disorders TRILAFON
is proving effective as a primary agent and also
as a valued adjunct to psychotherapy.

L· RANGE TRANQUILIZATION

in agitated ambulatory psychoneurotics

ADVANTAGES IN OUTPATIENT PRACTICE

jaundice has been notably infrequent in studies to date[1]

virtual freedom from significant hypotension[1,2]

relatively high therapeutic index[3]

mild insomnia and motor restlessness are infrequent

potent antiemetic effect[1]

dosage range: Dosage of TRILAFON must be individualized. Patients should be started on 4 to 8 mg. three times daily. Prompt reduction of dosage to minimum effective levels is desirable. The total daily dose should ordinarily not exceed 24 mg. in ambulatory patients. It is very important to employ the lowest effective dose since extrapyramidal symptoms increase in frequency and severity with increased dosage. Refer to Schering literature for specific information regarding dosage, side effects, precautions and contraindications.

TRILAFON Tablets: 2, 4 and 8 mg., bottles of 50 and 500.

1. Division of Clinical Research, Schering Corporation.
2. Ayd, F. J., Jr.: J. Am. Geriatrics Soc. 5:1, 1957.
3. Department of Pharmacology, Schering Corporation.

Schering

ANNOUNCING...FULL·

Trilafon*

(pronounced Tril'-a-fon) perphenazine

outmoding older concepts

IN ANXIETY AND TENSION STATES,

once inadequately treated with simple sedation, management became more effective with the early tranquilizers. Now TRILAFON, a new and more potent tranquilizing agent, is offered as an important contribution to this field of therapy.

RANGE TRANQUILIZATION

in anxiety and tension states

ADVANTAGES IN OFFICE USE

relief of anxiety, tension and psychomotor agitation at low dosages[1]

jaundice notably infrequent in studies to date[1]

virtual freedom from significant hypotension[1,2]

skin photosensitivity neither observed nor elicited experimentally[1]

nasal congestion uncommon

mild insomnia and motor restlessness infrequent

highly potent antiemetic[1]

dosage range: Dosage of TRILAFON must be individualized. In many patients a definite tranquilizing effect is produced with a dose of 2 or 4 mg. three times daily. A total daily dose of more than 16 mg. is seldom required to elicit a favorable response. It is very important to employ the lowest effective dose since extrapyramidal symptoms increase in frequency and severity with increased dosage. Refer to Schering literature for specific information regarding dosage, side effects, precautions and contraindications.

TRILAFON Tablets: 2, 4 and 8 mg., bottles of 50 and 500.

1. Division of Clinical Research, Schering Corporation.
2. Ayd, F. J., Jr.: J. Am. Geriatrics Soc. *5*:1, 1957.

Schering ®T.M. TR-J-237

The Well-Proportioned Nutrients in Enriched Bread

Equally Important in LOW-RESIDUE DIETS

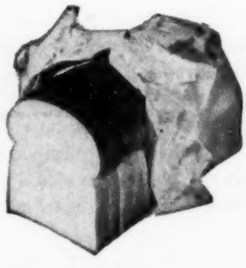
ENRICHED BREAD, plain or toasted, constitutes a nutritionally valuable component of the low-residue diet often prescribed in various gastrointestinal affections and following surgery on the gastrointestinal tract. In such conditions it is particularly necessary to provide adequate nutrition within the framework of a diet low in irritating substances.

The added nutrients in enriched bread are selected qualitatively and quantitatively because of their importance in everyday nutrition. They have proved equally advantageous when dietary adjustment is indicated for therapeutic purposes.

Enriched bread is nonirritating chemically as well as mechanically. It is free from bran and contains only negligible amounts (0.2 per cent) of soft cellulosic material. Its taste appeal is no less important than its open texture, its blandness, its easy digestibility.

The ready absorption of the balanced nutrients of enriched bread implements the utilization of its important amounts of protein, B vitamins, and minerals.

On the average, six slices of enriched bread (containing 4 per cent added nonfat milk solids), provide 12 grams of good quality protein (flour protein supplemented with milk protein), 0.36 mg. of thiamine, 0.26 mg. of riboflavin, 3.35 mg. of niacin, 3.5 mg. of iron, and 126 mg. of calcium.



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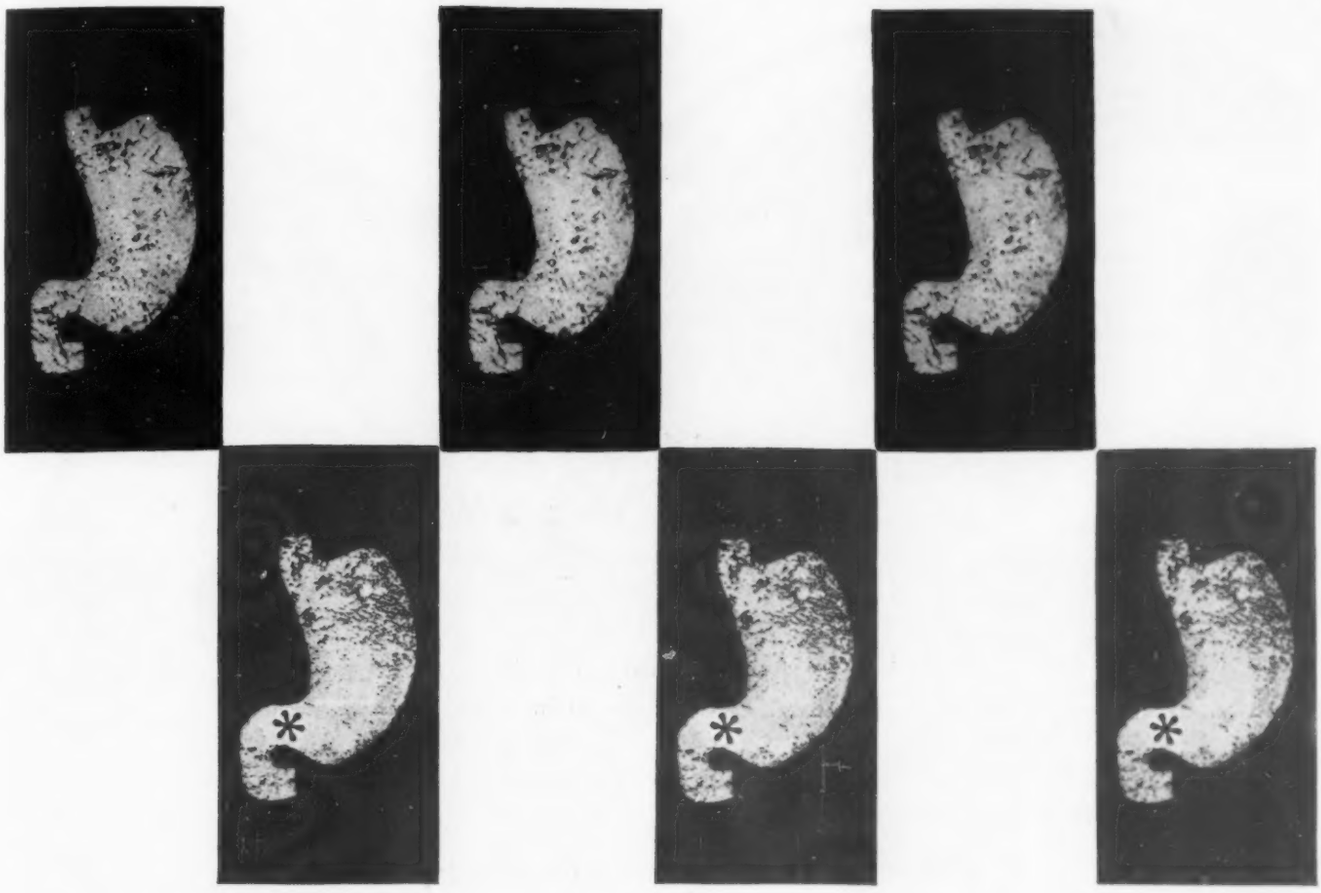
20 NORTH WACKER DRIVE • CHICAGO 6, ILLINOIS

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

TRUE ANTICHOLINERGIC ACTION



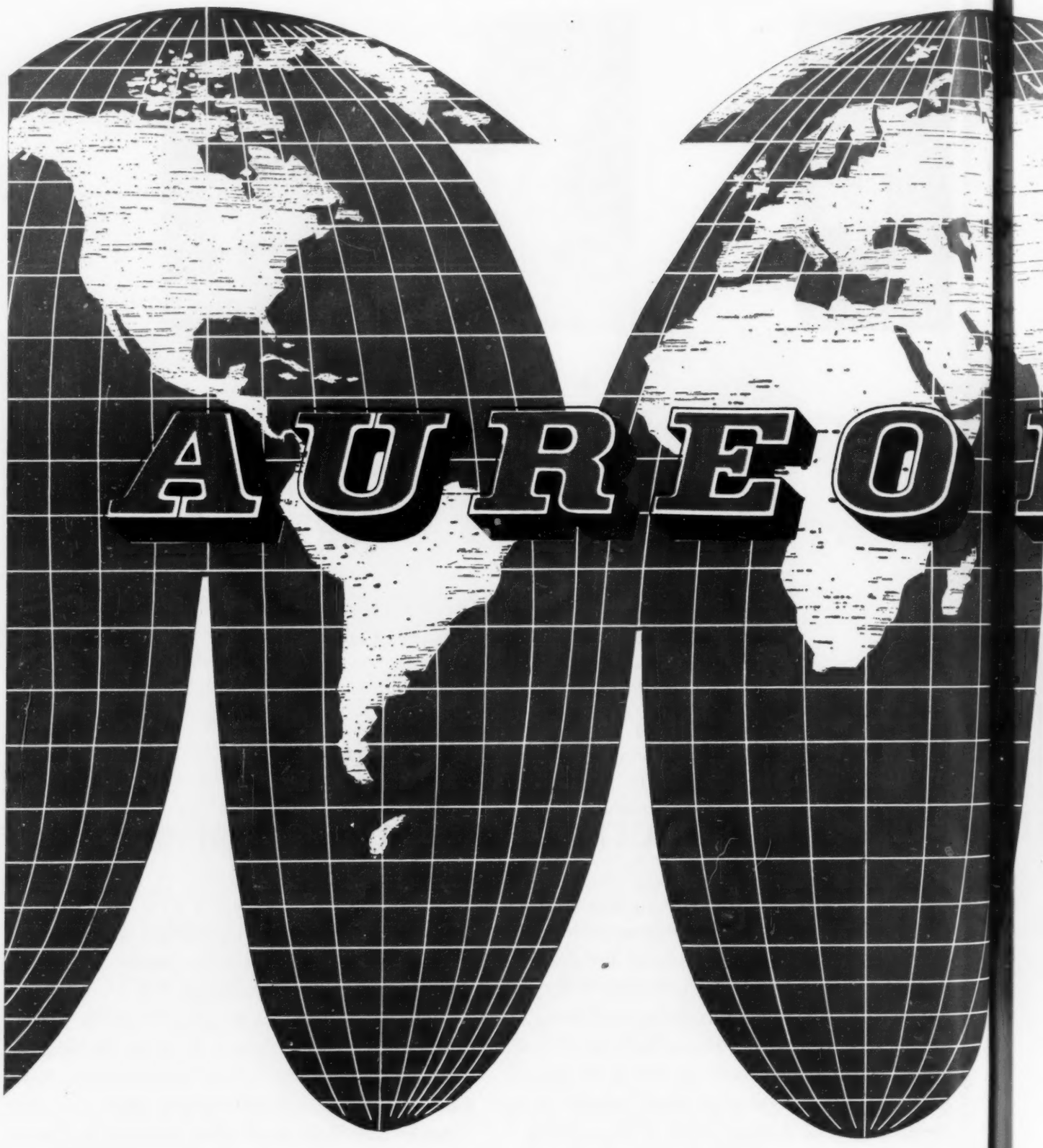
Pro-Banthīne® Inhibits Excess Parasympathetic Stimuli in Peptic Ulcer

Medical literature now contains more than 500 references to the beneficial role of Pro-Banthīne Bromide (brand of propantheline bromide) and Banthīne® Bromide (brand of methantheline bromide) as evidenced by a marked healing response of peptic ulcers. Rapid symptomatic improvement, particularly with reference to pain relief, is followed by roentgenographic demonstration of crater filling.

The therapeutic action of Pro-Banthīne in decreasing hypermotility and hyperacidity, together with the remarkable early subjective benefit, is a desired approach in ulcer management.

The initial suggested dosage is one tablet, 15 mg., with meals and two tablets at bedtime. An increased dosage may be necessary for severe manifestations and then two or more tablets four times a day may be indicated. G. D. Searle & Co., Chicago 80, Illinois, Research in the Service of Medicine.

SEARLE


AUREO

WORLD WIDE USAGE

M·Y·C·I·N*

Hydrochloride
Chlortetracycline HCl Lederle

A new era in therapy opened with the introduction of AUREOMYCIN. Subsequent widespread clinical use has repeatedly confirmed its remarkable effectiveness in the treatment of a variety of bacterial, rickettsial, protozoan, and certain viral infections.

Today, physicians throughout the world routinely employ AUREOMYCIN in their practice — AUREOMYCIN remains unsurpassed in anti-infective range, variety of dosage forms, effectiveness at *low* dosage.

A convenient dosage form for every medical requirement

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*Reg. U. S. Pat. Off.

Public Beware!

WARNING AGAINST THE HOXSEY CANCER TREATMENT

Sufferers from cancer, their families, physicians, and all concerned with the care of cancer patients are hereby advised and warned that the Hoxsey treatment for internal cancer has been found worthless by two Federal courts.

The Hoxsey treatment costs $400, plus $60 in additional fees—expenditures which will yield nothing of value in the care of cancer. It consists essentially of simple drugs which are worthless for treating cancer.

The Food and Drug Administration conducted a thorough investigation of the Hoxsey treatment and the cases which were claimed to be cured. Not a single verified cure of internal cancer by this treatment has been found.

Those afflicted with cancer are warned not to be misled by the false promise that the Hoxsey cancer treatment will cure or alleviate their condition. Cancer can be cured only through surgery or radiation. Death from cancer is inevitable when cancer patients fail to obtain proper medical treatment because of the lure of a painless cure "without the use of surgery, x-ray, or radium" as claimed by Hoxsey.

Anyone planning to try this treatment should get the facts about it.

For further information write to:
U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Food and Drug Administration
Washington 25, D. C.

PEACE OF MIND
ATARAX®
(BRAND OF HYDROXYZINE)

IN DIGESTIVE TRACT DISORDERS

—including spasm of the esophagus, peptic ulcer, nervous dyspepsia and mucous colitis, ATARAX gave satisfactory or adequate therapeutic results in 18 of 20 cases.[1] Wherever hyperemotivity is a complicating or causative factor, ATARAX is indicated because it provides peace of mind . . .

SWIFTLY—Effects often begin within 15 minutes.

SAFELY—Therapeutic margin greatly exceeds that of barbiturates[2] . . . tolerance is excellent.[2]

SURELY—Of 96 patients, 95 confirmed the sedative effect.[1]

ATARAX induces peace of mind without disturbing mental alertness.

No serious side effects have been reported.

DOSAGE: Adults: usually one 25 mg. tablet, or two teaspoonfuls syrup three times daily.

Children (over 3 years): usually one 10 mg. tablet, or one teaspoonful syrup, once or twice daily.

Because response varies from patient to patient, dosage should be adjusted accordingly.

SUPPLIED: Tablets: Tiny 10 mg. (orange) and 25 mg. (green) in bottles of 100.

Syrup: Ten mg. ATARAX per teaspoonful, pint bottles.

Prescription only

ROERIG Chicago 11, Illinois

References: 1. Farah, Luis: Preliminary study on the use of hydroxyzine in psychosomatic affections. Intl. Rec. of Med. and G.P. Clin. 169:379-389 (June) 1956. 2. Bayart, J.: On treatment by hydroxyzine of nervous conditions during childhood. Intl. Congr. Pediat., Copenhagen, Denmark, July 22-27, 1956. 3. Shalowitz, M.: Hydroxyzine: a new therapeutic agent for senile anxiety states. Geriatrics 11:312 (July) 1956. 4. Ende, Milton: Clinical evaluation of ATARAX. Va. Med. Month. 83:503 (Nov.) 1956. 5. Robinson, Harry M. Jr., et al: Hydroxyzine (ATARAX) hydrochloride in dermatological therapy. J.A.M.A. 161:604 (June 16) 1956. 6. Heuyer, G., Lang, J.L. and Chevreau, J.P.: report by Department of Pediatric Neuropsychiatry, La Salpetriere, Paris. 7. Noel, Guy: report by Neuropsychiatric Dept. of the Civil Hospital of Charleroi. Dec. 19, 1955. 8. Nathan, Lester A.: Personal communication. 9. Levine, E.R.: Preliminary report. 10. Clinical test of ATARAX. Commission for Testing of Drugs, French Republic, Ucepha Laboratories, Paris, Oct. 13, 1955.

FOCUS ON ACCURACY

The ever increasing interest in intra-arterial pressure emphasizes today's need for a meaningful degree of accuracy in its measurement.

It is as simple as this...

consistent, dependable, and repeatable blood-pressure readings are obtained with the BAUMANOMETER® because it is a true mercury-gravity instrument.

Lifetime Baumanometer®
STANDARD FOR BLOODPRESSURE

in the menopause when the feminine role falters

GYNETONE REPETABS

balanced estrogen-androgen

restores feminine well-being

In the faltering physiology of the menopause, control of physical and emotional symptoms without excessive hormonal effect should be the goal of therapy. This ideal requires a balanced estrogen-androgen combination that will provide maximal benefits without unwanted actions.

Because the delicate hormonal adjustment in GYNETONE REPETABS "approaches the ideal ratio,"* complete relief with practically no unwanted effects is given to the majority of patients. As a result of this total control of vasomotor symptoms plus a renewed sense of vigor and well-being, "patients expressed a definite preference"* for this combination.

The tonic, protein-anabolic action of GYNETONE is also valuable in menopausal, postmenopausal and senile osteoporosis, and in protein depletion states associated with long-term ACTH or corticosteroid therapy.

two strengths for individualized therapy:

GYNETONE REPETABS: Ethinyl Estradiol U.S.P., 0.02 mg. plus Methyltestosterone U.S.P., 5 mg.

GYNETONE® REPETABS® "double strength": Ethinyl Estradiol U.S.P., 0.04 mg. plus Methyltestosterone U.S.P., 10 mg.

*Moravec, C. L., and Moravec, M. E.: New York J. Med. 55:2775, 1955.

GT-J-217

Schering

SCHERING HORMONES

in modern practice

what is a live, healthy baby worth?

To the parents, a live, healthy newborn is priceless, but to the physician it's a kind of triumph, especially if there have been previous episodes of prematurity and fetal loss.

The benefits of natural environment. A purified preparation of relaxin, Releasin, represents a landmark in the progress of obstetrical practice. When administered early enough, Releasin can stop premature labor in many cases. Even when labor is not delayed until term, precious additional days or weeks may be gained for the fetus to mature in its natural environment — the uterus — rather than in the artificial and more expensive environment of an incubator.

Timing: Releasin therapy is frequently successful if used when labor occurs between the 29th and 36th week of pregnancy and before dilatation of the cervix exceeds 3 cm.

Administration: Dosage requirements will vary with degree of uterine activity. *Intramuscularly* — an initial dose of 2 cc. followed by 1 cc. every 2 to 4 hours until labor is arrested. If no response is observed after 3 or 4 injections, Releasin is not likely to be effective. Once labor is halted, one additional dose may be given.

Available: 1 cc. vials of sterile aqueous solution. Each 1 cc. vial contains the equivalent of 20 mg. (3000 G.P.U.) Relaxin Standard.

1. Perkoff, G. T., *et al.*: J. Clin. Endocrinol. *14*:531 (May) 1954. 2. Abramson, D., and Reid, D. E.: J. Clin. Endocrinol. *15*:206 (Jan.) 1955. 3. Eichner, E.; Waltner, C.; Goodman, M., and Post, S.: Am. J. Obst. & Gynec. *71*:1035 (May) 1956.

Releasin®

brand of relaxin

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100 YEARS OF SERVICE TO THE MEDICAL PROFESSION

One way to reduce weight!

But every doctor knows **a better way** is to go on a balanced low-calorie diet

Patients who are overweight because they overeat are likely to try all sorts of ways to postpone the only sound method for losing weight—i.e., adopting a balanced low-calorie diet. And no wonder ...many low-calorie diets are far from satisfying.

This is where the satiety value of fat can be of great help. When an adequate amount of fat is included in the low-calorie diet, meals are more satisfying and hence more effective in helping the overweight patient to continue on his reducing regimen.

In this connection, Crisco can play an important role. This pure, all-vegetable shortening is ideal for cooking. It also serves to make food more appetizing as well as more satisfying . . . and, hence, more valuable in fulfilling dietary requirements.

CRISCO

ALL-VEGETABLE . . . IT'S DIGESTIBLE

A PRODUCT OF PROCTER & GAMBLE

NOTABLY SAFE AND EFFECTIVE
INHALATION ANALGESIA

"Trilene"®

Brand of trichloroethylene U.S.P. (Blue)

SELF-ADMINISTERED WITH THE

"Duke"® University Inhaler

No. 3160 Model-M

With the "Duke" University Inhaler, "Trilene" analgesia can be self-administered by the patient, adult or child, under medical supervision, with a relatively wide margin of safety. Induction of analgesia is usually smooth and rapid. Inhalation is automatically interrupted if unconsciousness occurs. Outpatients can generally leave the doctor's office or hospital within 15 to 20 minutes.

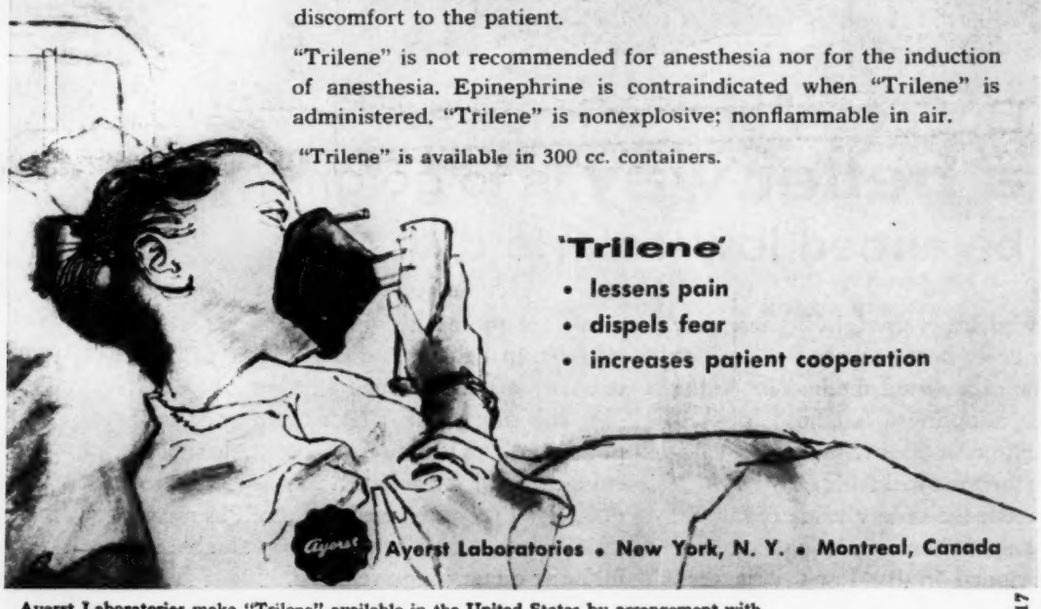
In Obstetrics . . . Self-administered "Trilene" will usually give effective relief of pain throughout labor and, for delivery, it may be employed in association with pudendal block or low spinal anesthesia.

In Pediatrics . . . The "Duke" University Inhaler is so easy to operate that even a child can administer his own "Trilene" analgesia.

In Surgery . . . With "Trilene," self-administered, many so-called "minor" yet painful procedures such as biopsies, suturing of lacerations, and reduction of simple fractures can be performed without discomfort to the patient.

"Trilene" is not recommended for anesthesia nor for the induction of anesthesia. Epinephrine is contraindicated when "Trilene" is administered. "Trilene" is nonexplosive; nonflammable in air.

"Trilene" is available in 300 cc. containers.



'Trilene'

- lessens pain
- dispels fear
- increases patient cooperation

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to your young patients
as antibacterial
effectiveness
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Gantrisin® - brand of
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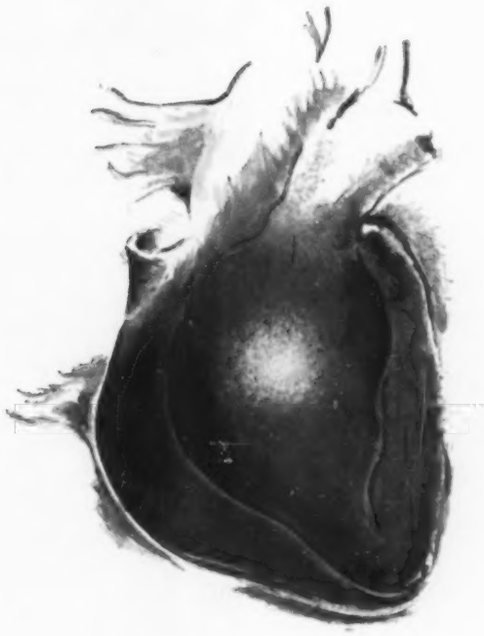
In most cases, you can now provide antibacterial treatment around the clock with only two doses of Lipo Gantrisin daily. By producing adequate twelve-hour blood levels, Lipo Gantrisin 'Roche' simplifies the treatment of children and chronic invalids. This palatable liquid provides all the therapeutic advantages of Gantrisin on a b.i.d. schedule.

Lipo Gantrisin® Acetyl—brand of acetyl sulfisoxazole in vegetable oil emulsion

in rheumatic fever...

The Telltale Heart



Carditis is a most serious manifestation of rheumatic involvement. It tells a tale of initial or recurrent streptococcal attack—of organic damage and grave dysfunction. To protect the heart from these consequences is a major objective of BICILLIN prophylaxis.

Recommended by the American Heart Association:[1]

- **To prevent rheumatic-fever onset**—treatment of streptococcal infections:

Children—One intramuscular injection of 600,000 to 900,000 units

Adults—One intramuscular injection of 900,000 to 1,200,000 units

- **To prevent rheumatic-fever recurrence**—prophylaxis of streptococcal infections:

Rheumatic-fever patients—One intramuscular injection monthly of 1,200,000 units

1. American Heart Association: Committee on Prevention of Rheumatic Fever and Bacterial Endocarditis, Charles H. Rammelkamp, Chairman: Circulation *15*:154 (Jan.) 1957.

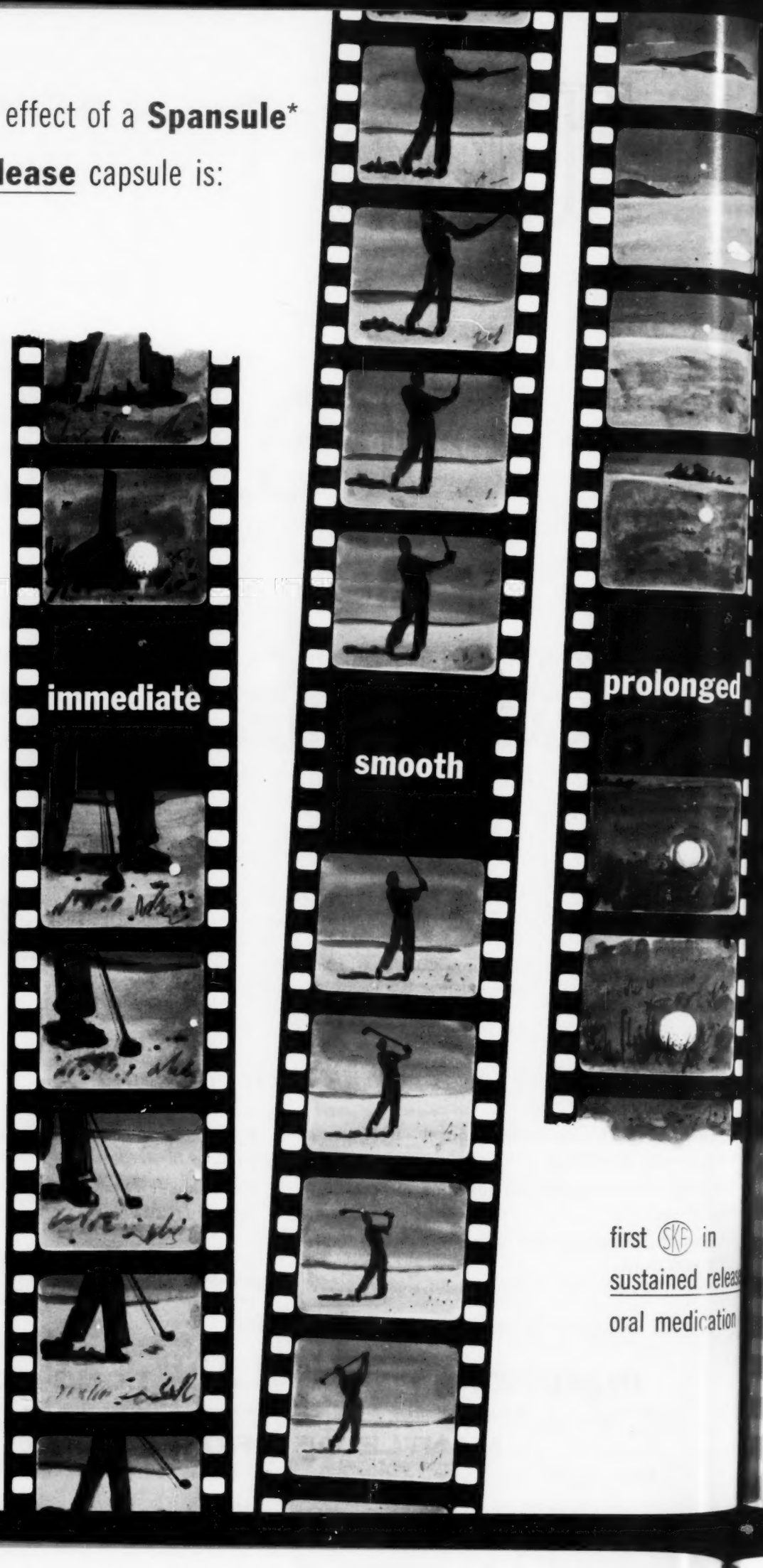
Wyeth®
Philadelphia 1, Pa.

INJECTION BICILLIN® LONG-ACTING

Benzathine Penicillin G (Dibenzylethylenediamine Dipenicillin G), Wyeth

MANTLE OF PROTECTION

The therapeutic effect of a **Spansule*** **sustained release** capsule is:



first (SKF) in
sustained release
oral medication

Pellets magnified X50

new: a well-tolerated broad-spectrum antibacterial in a new and unique sustained release **liquid form**

Sul-Spansion†

sulfaethylthiadiazole, S.K.F. (sulfa **Spansule*** suspension) sustained release

sustained, optimum therapeutic blood and urine levels around-the-clock with a single oral dose q12h

0.25 mg. & 0.50 mg.

When your hypertensive patient needs prolonged control of blood pressure and gentle relaxation . . .

Eskaserp* Spansule*

reserpine, S.K.F. sustained release capsules, S.K.F.

Two strengths

When your overwrought patient needs smooth and subtle relief of both anxiety and depression . . .

Dexamyl* Spansule*

Dexedrine* plus amobarbital sustained release capsules, S.K.F.

(1) 'Dexedrine', 10 mg., and amobarbital, 1 gr. (2) 'Dexedrine', 15 mg., and amobarbital, 1½ gr.

10 mg. & 15 mg.

When your obese patient needs day-long control of appetite in weight reduction . . .

Dexedrine* Spansule*

dextro-amphetamine sulfate, S.K.F. sustained release capsules, S.K.F.

1 gr. & 1½ gr.

When your nervous, irritable patient needs continuous, soothing sedation . . .

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phenobarbital, S.K.F. sustained release capsules, S.K.F.

0.4 mg. plus 1 gr.

When your tense, excitable patient suffers from visceral spasm or peptic ulcer . . .

Prydonnal* Spansule*

atropine, scopolamine, hyoscyamine plus phenobarbital sustained release capsules, S.K.F.

Also available: Prydon* Spansule* capsules, 0.4 mg. and 0.8 mg.—belladonna alkaloids without phenobarbital

8 mg. & 12 mg.

When your allergic patient needs uninterrupted antihistamine protection . . .

Teldrin* Spansule*

chlorprophenpyridamine maleate sustained release capsules, S.K.F.

sustained release of medication over a prolonged period of time

'Spansule' capsules are unique—in manufacturing process, in appearance and in principle of action. The hundreds of tiny, variously coated pellets in each capsule assure a release of medication which is uniform, continuous and prolonged—regardless of individual variations in pH and motility of the intestinal tract.

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Smith, Kline & French Laboratories, Philadelphia

first ⧗ in sustained release oral medication

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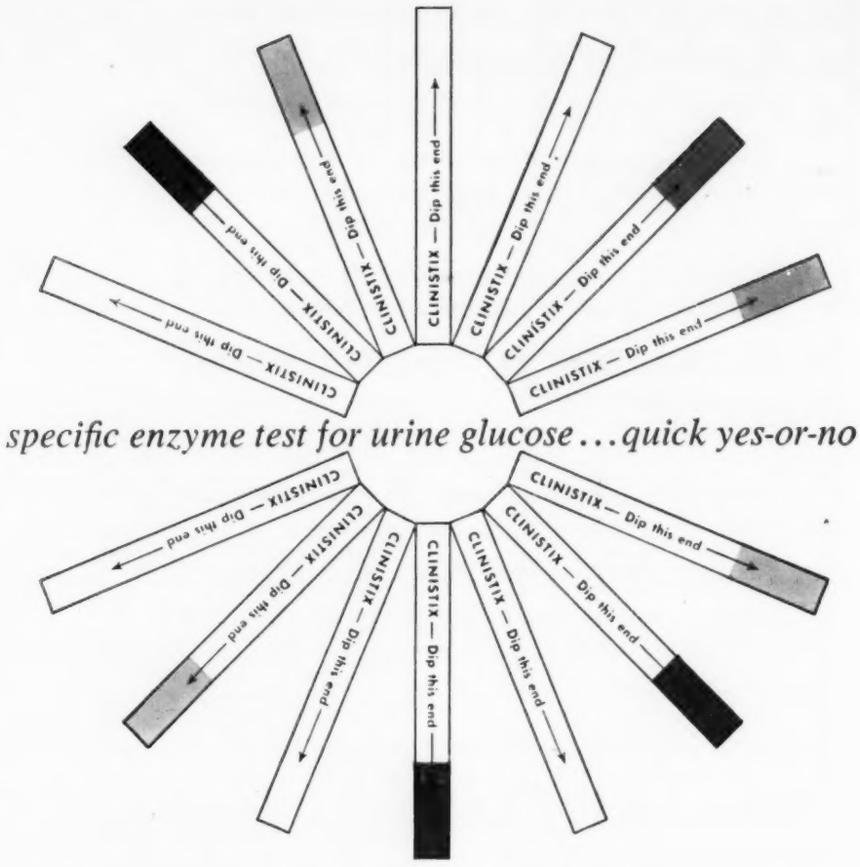

specific enzyme test for urine glucose . . . quick yes-or-no

For daily check by mild and well-controlled diabetics

CLINISTIX Reagent Strips show presence or absence of glucose. If glucose is present, the "diagnostic tip" turns blue. No blue color—no glucose.

Dependable qualitative test

The Ames Company does not recommend enzyme-paper testing for quantitation because many factors which vary widely in different urines can affect the speed and intensity of color with enzyme tests.

Handy strips with "diagnostic tips"—

firm, easy to handle
test end clearly indicated—helps avoid contamination
record chart for patient's reports

Supply: Packets of 30 CLINISTIX Reagent Strips in protective foil pouch. Lie flat in pocket or purse. Bottles of 60 CLINISTIX Reagent Strips for economy, convenience in office testing.

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BRAND
Reagent Strips

AMES COMPANY, INC · ELKHART, INDIANA
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23057

relaxes both mind and muscle

for anxiety and tension in everyday practice

- well suited for prolonged therapy
- well tolerated, relatively nontoxic
- no blood dyscrasias, liver toxicity, Parkinson-like syndrome or nasal stuffiness
- chemically unrelated to phenothiazine compounds and rauwolfia derivatives
- orally effective within 30 minutes for a period of 6 hours

For treatment of **anxiety and tension states and muscle spasm**

THE ORIGINAL MEPROBAMATE

Miltown®

2-methyl-2-n-propyl-1,3-propanediol dicarbamate—U. S. Patent 2,724,720

Tranquilizer with muscle-relaxant action

DISCOVERED AND INTRODUCED

BY WALLACE LABORATORIES, *New Brunswick, N. J.*

SUPPLIED: *(Bottles 50 tablets)*
400 mg. scored tablets
200 mg. sugar-coated tablets

USUAL DOSAGE: *One or two 400 mg. tablets t.i.d.*

Literature and Samples Available on Request

THE MILTOWN® MEPROBAMATE MOLECULE

NOW IN 2 CONVENIENT DOSAGES

NEW 200 mg. SUGAR-COATED TABLETS

STANDARD 400 mg. SCORED TABLETS

reports of clinical studies

1 "I have used meprobamate in my general psychiatric practice since April, 1955, and believe it to be [a] drug of choice for relief of tension, anxiety and insomnia."

Lemere, F.: Northwest Med. **54:** *1098, 1955.*

2 ". . . the patient [taking Miltown] never describes himself as feeling detached or 'insulated' by the drug. He remains . . . in control of his faculties, both mental and physical, and his responsiveness to other persons is characteristically improved."

Sokoloff, O. J.: A.M.A. Arch. Dermat. **74:** *393, 1956.*

3 "Of special importance is the fact that Miltown does not appear to affect autonomic balance—which in alcoholics is often unstable . . ."

Thimann, J. and Gauthier, J.W.: Quart. J. Stud. Alcohol. **17:** *19, 1956.*

4 "The [relative] absence of toxicity, both subjectively and objectively, is an important feature in favor of Miltown. In addition, there were no withdrawal phenomena noted on cessation of therapy, whether it was withdrawn rapidly or slowly."

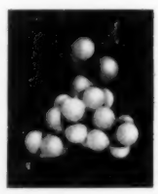
Borrus, J.C.: J.A.M.A. **157:** *1596, 1955.*

5 "Miltown is of most value in the so-called anxiety neurosis syndrome, especially when the primary symptom is tension . . . Miltown is an effective dormifacient and appears to have . . . advantages over the conventional sedatives except in psychotic patients. It relaxes the patient for natural sleep rather than forcing sleep."

Selling, L.S.: J.A.M.A. **157:** *1594, 1955.*

THE ORIGINAL MEPROBAMATE®

Miltown



THE MILTOWN® MEPROBAMATE MOLECULE

2-methyl-2-n-propyl-1,3-propanediol dicarbamate—U.S. Patent 2,724,720

Tranquilizer with muscle-relaxant action

DISCOVERED AND INTRODUCED BY WALLACE LABORATORIES, *New Brunswick, N. J.*

Rauwiloid®

A Widely Preferred Antihypertensive

. . . because Rauwiloid (alseroxylon) is outstanding for its effectiveness and safety . . . because minimal dosage adjustment is necessary . . . because the incidence of depression is low . . . because up to 80% of patients with mild labile hypertension and many with more severe forms respond to Rauwiloid as the sole medication.

An Effective Tranquilizer, too

. . . because Rauwiloid's *nonsoporific* sedative action relieves anxiety in a long list of unrelated diseases not necessarily associated with hypertension . . . without masking of symptoms . . . without impairing intellectual or psychomotor efficiency.

Dosage: Simply two 2 mg. tablets at bedtime. After full effect one tablet suffices.

A logical first step when more potent drugs are needed

Rauwiloid is recognized as basal medication in all grades and types of hypertension. In combination with more potent agents it proves synergistic or potentiating, making smaller dosage effective and freer from side actions.

Rauwiloid®+Veriloid®

In moderate to severe hypertension this single-tablet combination permits long-term therapy with dependably stable response. Each tablet contains 1 mg. Rauwiloid and 3 mg. Veriloid (alkavervir). Initial dose, 1 tablet t.i.d., p.c.

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In severe, otherwise intractable hypertension this single-tablet combination provides smoother, less erratic response to hexamethonium. Each tablet contains 1 mg. Rauwiloid and 250 mg. hexamethonium chloride dihydrate. Initial dose, ½ tablet q.i.d.

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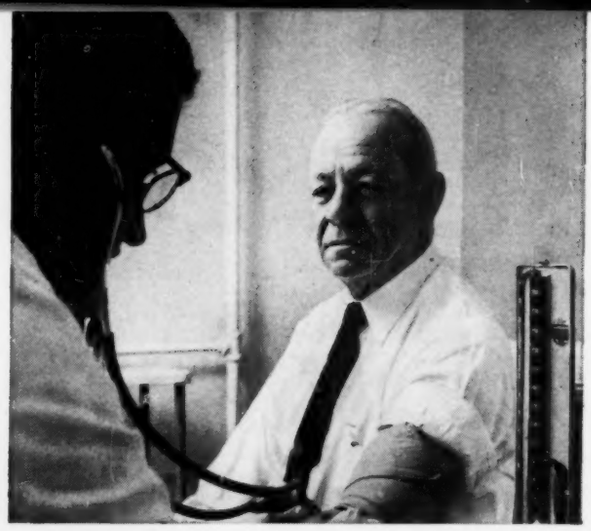

when blood pressure must come down

increased antihypertensive benefits

Lowering of diastolic and systolic pressures
Beneficial bradycardia
Increase in renal blood flow

low dosage of Apresoline

Combined with Serpasil, Apresoline is effective at an average daily dose of only 200 mg. Thus, side effects such as headache and tachycardia seldom occur.

versatility

Easier management of hypertension is made possible by two tablet strengths of Serpasil-Apresoline.

All patients to be given Serpasil-Apresoline may benefit from priming with Serpasil.

SERPASIL-APRESOLINE *Tablets Standard-strength* (scored), each containing 0.2 mg. of Serpasil and 50 mg. of Apresoline hydrochloride; *Tablets Half-strength* (scored), each containing 0.1 mg. of Serpasil and 25 mg. of Apresoline hydrochloride.

Serpasil®-Apresoline®

hydrochloride

(reserpine and hydralazine hydrochloride CIBA)

COMBINATION TABLETS

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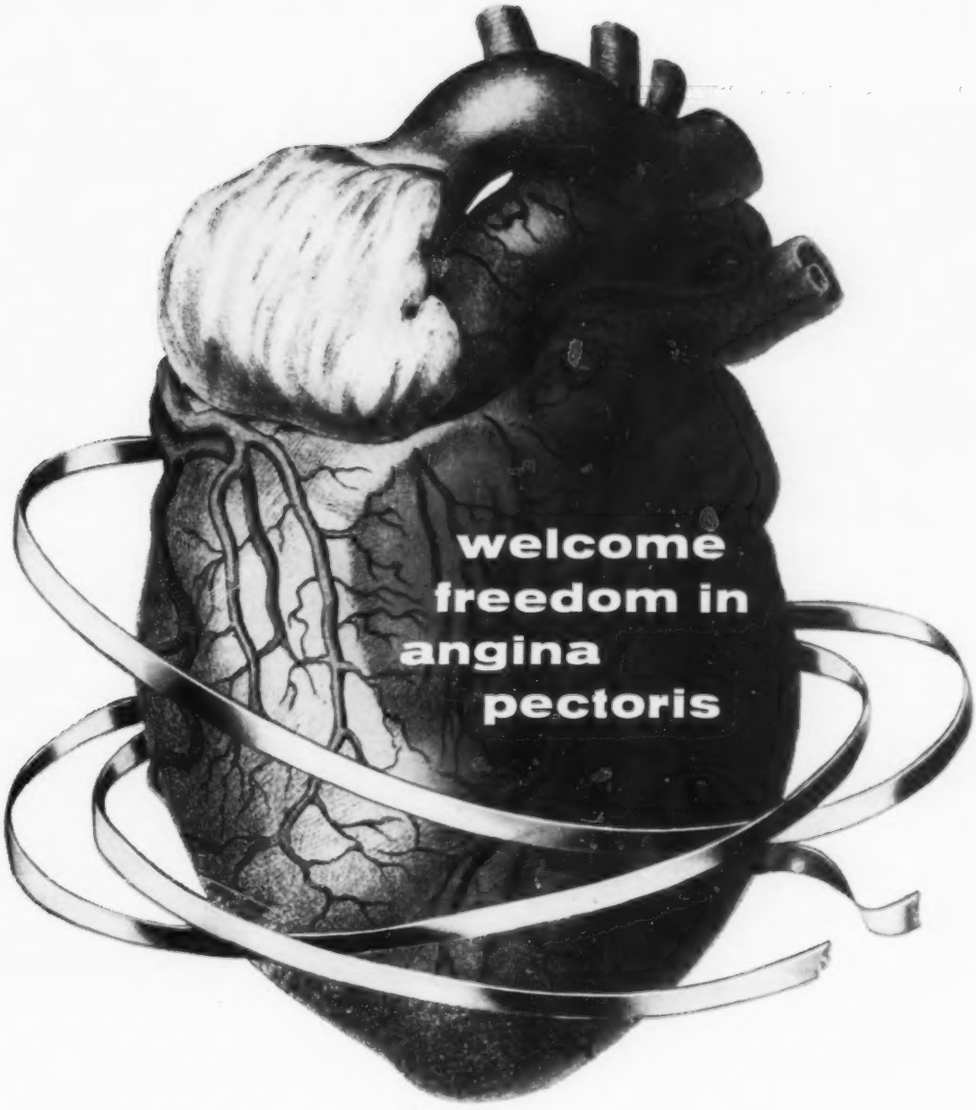

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Squibb Triethanolamine Trinitrate Diphosphate

welcome freedom from pain – Nitretamin is a long-acting coronary vasodilator which improves myocardial blood supply. It has been found highly effective in the prevention of anginal pain.

welcome freedom from inconvenience – Nitretamin dosage in relation to mealtime is not critical. It is excellent for busy patients who cannot always plan their meals to coincide with a rigid plan of medication. The small Nitretamin bottle can be conveniently carried in pocket or purse.

welcome freedom from more disturbing side-effects With Nitretamin, methemoglobinemia and reflex tachycardia have not been observed. Nitretamin seldom lowers blood pressure in normotensive patients.

dosage: The usual dosage is 1 tablet t.i.d., preferably before meals, and 1 or 2 tablets at bedtime.

supply: 2 mg. tablets in bottles of 50.

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release from anxiety

ULTRAN

(Phenaglycodol, Lilly)

mild, well-tolerated tranquilizer

anxiety quickly allayed

The patient with vague symptoms, nervous and distressed under the burden of unsolved problems, finds release from anxiety and restoration of emotional composure.

mental acuity not impaired

Exhaustive psychological testing shows that recommended dosage does not affect intellectual or motor abilities. This has been established by objective and standardized quantitative tests.

chemically unique

'Ultran' is a new chemical compound, one of a group of butanediols synthesized at the Lilly Research Laboratories. It is not a modification of any other therapeutic agent.

***Dosage:** Usually, 1 pulvule t.i.d.*

***Supplied:** As attractive turquoise-and-white pulvules of 300 mg., in bottles of 100.*

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one capsule once-a-day.

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(Continued from preceding page)

PATHOLOGY RESIDENT — VACANT JULY 1ST; 900 bed GM&S VA Hospital+, located 70 miles from Washington, D. C.; affiliated with George Washington University Medical School; approved programs, either combined or separate, in pathological anatomy and clinical pathology, seminars and extensive research facilities with opportunity to participate in Cancer Research and Radioisotope work; salary $2,840 to $3,550, according to previous experience. Apply to: Manager, VA Center Martinsburg, West Virginia. D

INTERNAL MEDICINE — PATHOLOGY AND CHEST diseases in 500 bed Veterans Administration Hospital+, Albuquerque, New Mexico; delightful all-year climate, outstanding teaching program under medical school with affiliation for necessary female and pediatric training; citizenship required; housekeeping facilities available at modest cost. Contact: Director, Professional Services, Veterans Hospital, Albuquerque, New Mexico or Dean, University of Colorado Medical School, Denver, Colorado. D

THE SILVER HILL FOUNDATION+, FOR THE treatment of the Psychoneuroses—announces appointments available as residents in psychiatry; training particularly in short-term reeducational psychotherapy; careful supervision; excellent professional opportunity; AMA approved; generous compensation. Applications should be made to: Dr. William B. Terhune, Medical Director, The Silver Hill Foundation, New Canaan, Connecticut. D

PATHOLOGY RESIDENCIES — 600 BED GENERAL hospital*+; 4 year approval in both pathologic anatomy and clinical pathology; 450 autopsies, 4000 surgicals; teaching material available from 900 autopsies and 13000 surgicals; instruction from 5 Board certified pathologists; beginning stipend $3900, second year $4200, 3rd year $5100, 4th year $5400; only graduates of approved medical schools. Apply, Director of Laboratories, Hurley Hospital, Flint, Michigan. D

PSYCHIATRIC RESIDENCY VACANCIES — APproved 3 year residency in conjunction with Northwestern University Medical School; extensive training program in clinical psychology, vocational counseling, social service, and related fields; salary ranges from $2840-$3550; and for career residents $7570-$10,065; hourly commuting distance Chicago; citizenship required. Write: Manager Veterans Administration Hospital+, Downey, Illinois. D

APPROVED RESIDENCIES IN PHYSICAL MEDICine and rehabilitation—available at New York University-Bellevue Medical Center*+ beginning July 1, 1957; American graduates with approved internships eligible for OVR fellowship, starting at $5,400 per year with added dependency allotment. Make immediate application to: Joseph G. Benton, MD, Institute of Physical Medicine and Rehabilitation, 400 East 34 Street, New York 16, New York. D

MEDICAL RESIDENCY — UNEXPECTED VACANCY for 3rd year resident in internal medicine; for July 1, 1957; in approved 500 bed hospital*+ in Mid-West. Box 3202 D, % AMA.

RADIOLOGY RESIDENCIES IN 600 BED GENERAL hospital*+—3 or 4 year programs available covering diagnosis, therapy, radium, and isotopes; 3 full time radiologists; primary teaching hospital of The University of Texas Southwestern Medical School; vacancies July 1 and September 1, 1957 and January 1, 1958. Apply: Director, Department of Radiology, Parkland Memorial Hospital, Dallas 35, Texas. D

APPROVED RESIDENCY IN INTERNAL MEDICINE—at Veterans Administration Hospital+ affiliated with Johns Hopkins and University of Maryland Medical Schools; housing available for single or married residents; American citizenship required; stipend $2840, $3195, $3550 per year; full teaching and research programs. Apply to: Director, Professional Services, VA Hospital, Perry Point, Maryland. D

APPROVED RESIDENCIES IN MEDICINE, PATHOlogical anatomy, psychiatry and pulmonary diseases; available July 1, 1957; 684 bed county hospital*+ near New York City; exceptional educational opportunity; only applicants who have completed 1 year approved internships will be considered; stipend $200 monthly plus complete maintenance. Apply: Superintendent, Bergen Pines County Hospital, Paramus, New Jersey. D

PATHOLOGY RESIDENCY — BEGINNING JULY, 1957; 385 bed general hospital*+; approved 4 years in C. P. and P. A.; 8000 surgicals, 325 autopsies, 150,000 clinical tests, research facilities available; program directed by 3 certified pathologists; good living conditions; salary $275 plus maintenance, with adjustment if married. Apply: Dr. C. Allen Payne, Director of Labs, Blodgett Memorial Hospital, Grand Rapids, Michigan. D

DERMATOLOGY — POSITIONS AVAILABLE; BOARD approved 3 years; openings now in any of the 3 year program; many courses in basic sciences and clinical studies offered in post-graduate medical college; large out-patient clinic and city hospital for teaching purposes; excellent remuneration. Write: Department of Dermatology, Wayne State Medical College, Receiving Hospital, Detroit 26, Michigan. D

PATHOLOGY RESIDENCIES—AVAILABLE JULY 1, 1957; UCLA School of medicine affiliation; Board approval 4 years; salary $2840 to $4000; citizenship and graduation from approved medical school required. Write to: Director, Professional Services, General Medical and Surgical Hospital.*+ Veterans Administration Center, Los Angeles 25, California. D

RADIOLOGY RESIDENCY—MAJOR TEACHING CENter for medical school; State University of New York, College of Medicine at New York City, Downstate Medical Center; approved for 3 years including isotopes; positions available July 1, 1957, and January 1, 1958. Apply: Department of Radiology, Kings County Hospital Center*+, 451 Clarkson Avenue, Brooklyn 3, New York. D

SURGICAL RESIDENCIES—1ST, 2ND & 4TH YEAR level; Board approved 4 year program; rotating through specialties including thoracic and gynecology; research opportunities; 400 bed teaching hospital*+ in New York City, affiliated with medical school; $175 & $220 per month plus complete maintenance; appointments available July 1, 1957. Box 3058 D, % AMA.

RESIDENTS WANTED—FOR RESIDENCY STARTING July 1, 1957; general rotaton residency in 174 bed hospital; well-esuipped in all services; U. S. citizenship 1 year internship and eligibility for California licensu required; in attractive mountain, seaside, resort city; salary $560 per month. Apply to: Director, County Hospital, Santa Cruz, California. D

GENERAL PRACTICE RESIDENCY—GENERAL PRACtice resident wanted July 1, 1957; County hospital* 205 beds, emergency service, and out-patient department; graduates of approved schools only. Write to: Assistant Superintendent, Pierce County Hospital, Tacoma 8, Washington. D

INTERNAL MEDICINE ACCREDITIZATION — FELlowship in clinical oncology, emphasizing endocrinological and biochemical aspects of therapy; stipend $300 per month tax free; available immediately. Apply: Dr. S. G. Taylor, University of Illinois College of Medicine*+, Chicago. D

RECENTLY APPROVED ROTATING INTERNSHIP — active 200 bed hospital* in rapidly growing industrial and residential area in Bucks County; 50% of staff Board certified; salary $150 per month. Apply: Administrator, Lower Bucks County Hospital, Bristol, Pennsylvania. D

RESIDENCIES AVAILABLE—JULY 1, 1956; IN SURgery, medicine, and obstetrics; non-approved; no exchange number; salary $250 per month plus full maintenance; 110 bed hospital fully accredited by the joint commission. Write: Administrator: Belmont Community Hospital, 4058 W. Melrose, Chicago, Illinois. D

ANESTHESIOLOGY RESIDENCIES—AT UNIVERSITY of Minnesota Hospitals, Minneapolis Veterans Administration Hospitals and associated hospitals; an opening every 4 weeks. Address: Frederick H. Van Bergen, MD, Director of Anesthesiology, University of Minnesota Hospital, Minneapolis, Minnesota. D

INTERNAL MEDICINE RESIDENCY—APPROVED 3 year productive teaching program; modern medical center for 115,000 members; 20 full time internists; stipend $3,189-$4080 per annum. Contact: C. C. Herbert, MD, Kaiser Foundation Hospital*+, San Francisco, California. D

WANTED — GENERAL PRACTICE RESIDENTS; FOR newly established residency in accredited county general hospital+, approval pending; hospital currently participating in approved intern, medical and surgical resident training program, brochure. Apply: Medical Director, General Hospital, Santa Barbara, California. D

INTERNAL MEDICINE — FULLY APPROVED 3 year residency available; 300 bed general hospital*+; university affiliated program; full teaching staff of Board certified specialists; beginning stipend $325 per month. Apply: Administrator, McLaren General Hospital, Flint, Michigan. D

AVAILABLE JULY 1, 1957—TO GRADUATES OF APproved medical schools; 1 year rotating internships; salary $205 per month; also 1 year general practice residency and 1 year general surgical residency, salary $411 per month; housing is available; internship and residencies AMA approved. Apply: Medical Director, General Hospital of Riverside County,*+ Arlington, California. D

SURGICAL RESIDENTS—APPROVED GENERAL 228 bed hospital*+; 1 year senior residency available, and three year residency available; 1st year $345, 2nd $370, 3rd $395 monthly, plus uniforms laundry; inexpensive room and board available; teaching program affiliation with the University of Michigan. Apply: Administrator, Saginaw General Hospital, Saginaw, Michigan. D

GENERAL PRACTICE RESIDENCY — BEGINNING July 1st; 225 bed general hospital, central California; excellent experience and opportunity to do general surgery; good working conditions, 15 day paid vacation and holidays; salary $7260; home available; citizenship; California Boards are necessary. Kings County General Hospital, Hanford, California. D

RADIOLOGY RESIDENCY—VACANCY SECOND YEAR level, July 1, 1957; in large general hospital;+ main teaching unit of medical school; U. S. or Canadian citizenship; 2nd year stipend, $4,000; 3rd year, $5,000; program has 3 year approval. Apply: R. Wigh, MD, Chairman, Dept. of Radiology, Medical College of Georgia, Augusta, Georgia. D

INTERN-EXTERN TRAINING PROGRAM; 16 APproved rotating internships; new modern 216 bed general hospital*+; organized teaching program; active outpatient department; interns: $190 per month; externs: $120 per month. Address: Intern Resident Committee, Kaiser Foundation Hospital, 2425 Geary Boulevard, San Francisco 15, California. D

ANESTHESIOLOGY RESIDENCIES — APPROVED 2 year active teaching programs with unusually wide clinical experience; opportunities for clinical, teaching and research appointments in hospital and medical college after completion of training. Write: C. M. Landmesser, MD, Director of Anesthesiology, Albany Medical Center,*+ Albany, New York. D

OPENING JULY 1, 1957—2ND YEAR RESIDENT INternal medicine; accredited medical school graduate; 1 year rotating internship; 1 year residency medicine; St. Mary's Hospital,*+ Cincinnati, Ohio; fully approved internship, 3 year medical, 4 year surgical residency; out-patient clinics. Director, Medical Resident Program. D

PATHOLOGY RESIDENCY — JULY 1ST; 250 BED hospital,+ suburban Philadelphia; 2 year Board approved in pathologic anatomy; 168 autopsies; 1789 surgical specimens in 1956; full maintenance provided; stipend depending upon experience. Apply: Pathologist, Burlington County Hospital, Mount Holly, New Jersey. D

GENERAL PRACTICE RESIDENTS WANTED — 150 bed general hospital, located in beautiful coastal community of 65,000; year round recreational activities; fully accredited; salary $600 per month; to begin July 1, 1957; must be U. S. citizen. Write to: Administrator, General Hospital, San Luis Obispo, California. D

ANESTHESIOLOGY RESIDENCY—TWO FIRST YEAR appointments available in medical school teaching hospital*+; applications accepted from graduates of approved medical schools only. For information write: J. Gerard Converse, MD, Director of Anesthesiology, Jackson Memorial Hospital, Miami 36, Florida. D

ANESTHESIOLOGY RESIDENCIES — FULLY APproved residency with didactic, laboratory and clinical instruction; large thoracic service; available immediately. Apply to: Alfred J. Catenacci, MD, Hahnamann Medical College and Hospital,*+ Philadelphia, Pennsylvania. D

WANTED — ONE JUNIOR ASSISTANT RESIDENT; fully accredited 4 year surgical program with rotation through surgical specialties; beginning stipend $2400 increasing to $3600 for 4th year; full maintenance. Apply: Dr. J. M. Emmett, Cheaspeake and Ohio Hospital,*+ Clifton Forge, Virginia. D

PATHOLOGY—RESIDENCY PRESENTLY AVAILABLE in recently established medical examiner's office; training offered in all aspects of forensic pathology and toxicology; stipend plus. For information write: Edward S. Zawadski, MD, Wayne County Medical Examiner, Brush & Lafayette, Detroit 26, Michigan. D

WANTED — 5 INTERNS; JULY 1, 1957; 1 YEAR ROtating; approximately 225 bed capacity; $200 month, full maintenance; new expansion program planned; circular available. St. Francis Hospital,* Poughkeepsie, New York. D

DUE TO CALL TO MILITARY SERVICE HAVE UNexpected opening for 1st year resident in fully approved OB-GYN residency. Contact: T. Hart Baker, MD, Kaiser Foundation Hospital,*+ 4867 Sunset Boulevard, Los Angeles, California. D

WANTED—RESIDENTS IN PSYCHIATRY; 3 YEAR approved residencies available; large eastern mental hospital+; excellent teaching program therapeutic procedure; $5,280-$6,600. Box 3250 D, % AMA.

RESIDENCIES — THE UNIVERSITY OF MISSOURI School of Medicine anounces the commencement of a residency training program on July 1, 1957; positions available in internal medicine, surgery, pediatrics, obstetrics and gynecology, pathology, radiology, and general practice; new 441 bed teaching hospital+; full time academic staff salary, 1st year $2400, 2nd year $3000, 3rd year $3600, 4th and 5th year by arrangement; uniforms and uniform laundry provided; located in pleasant university town with excellent cultural and recreational facilities. Address inquiries to: Dean Roscoe L. Pullen, University of Missouri Medical Center, Columbia, Missouri. D

RESIDENCIES IN PSYCHIATRY—DUKE UNIVERsity*+; vacancies have developed in our training program including one second year and one third year resident, July 1, 1957, and one first year, January 1, 1958; large, new patient and research facilities; closely supervised, analytically oriented psychotherapy and somatic therapy; adult and children's OPD; training in psychosomatic medicine and neurology; minimum starting salary $2,400, plus room and board, uniforms and other financial aid. Write: Chairman, Department of Psychiatry, Duke University, Durham, North Carolina. D

APPROVED 12 MONTH ROTATING INTERNSHIP—including 3 months surgery, 3 months medicine, 2 months OB-GYN, 2 months surgical specialties, 1 month emergency room (Detroit Receiving Hospital); 1 month pediatrics (Children's Hospital); residencies in surgery, medicine OB-GYN radiology, pathology and anesthesiology available; remuneration $250 per month including full maintenance and Blue Cross coverage; positions available July 1, 1957. For further information write or wire: Director of Education, Detroit Memorial Hospital*+, 1420 S. Antoine St., Detroit 26, Michigan. D

PSYCHIATRIC RESIDENCIES — AVAILABLE, VA Hospital+, Albany, New York; approved 3 year program in a 1000 bed, GM&S hospital; extensive treatment program affords experience with individual and group psychotherapy and various somatic therapies; affiliation with Albany Medical College offers further experience in out-patient treatment, neurology and child psychology; career residencies available at staff salary. Write: Director, Professional Services, VA Hospital, Albany, New York. D

RESIDENCY IN INTERNAL MEDICINE — THREE year coordinated residency*+ with 1 year at each of 3 hospitals in Rhode Island; Memorial Hospital, Pawtucket, Newport Hospital, Newport, and Miriam Hospital, Providence; appointment for 1 or 2 years available this year for physicians who have completed 1 or 2 years of approved training; supervision by Dr. Alex. M. Burgess, Sc.D., F.A.C.P. Director of Medical Education at the 3 hospitals. For information, write to: Dr. Burgess, 107 Bowen Street, Providence 6, Rhode Island. D

APPROVED GENERAL SURGERY RESIDENCIES—In the Medical College of Georgia Medical Center+ for graduates of approved schools; the expanded training program includes the New Eugene Talmadge Memorial Hospital, the University Hospital, and the Veteran's Administration Hospital; openings at both 1st and 2nd year residency levels for July 1, 1957; salaries $3,600 and $4,000 without maintenance; 4 year approval. Apply: Wm. H. Moretz, Chairman, Dept. of Surgery, Medical College of Georgia, Augusta, Georgia. D

APPROVED RESIDENCIES—INTERNAL MEDICINE available quarterly; Veterans Administration Center+, Dayton, Ohio; 3-4 year program; citizenship required; affiliated and supervised by Ohio State University medical school; salary $2840-$4000 per year; approved for benefits under public law 550; outstanding record with speciality Board significantly higher than National averages. Apply: Dr. S. Simerman, Chief, Medical Service, VA Center, Dayton, Ohio. D

PATHOLOGY RESIDENCY — JULY 1ST; 400 BED general hospital*+ in suburban Philadelphia; 4 year Board approved; laboratories directed by 2 full time pathologists certified in pathologic anatomy and clinical pathology; 242 autopsies, 4,788 surgicals, 296,000 clinical procedures in 1956; staff includes full-time bacteriologist and chemist; full maintenance provided, plus generous cash stipend depending on experience. Apply: Pathologist, Abington Memorial Hospital, Abington, Pennsylvania. D

(Continued on next page)

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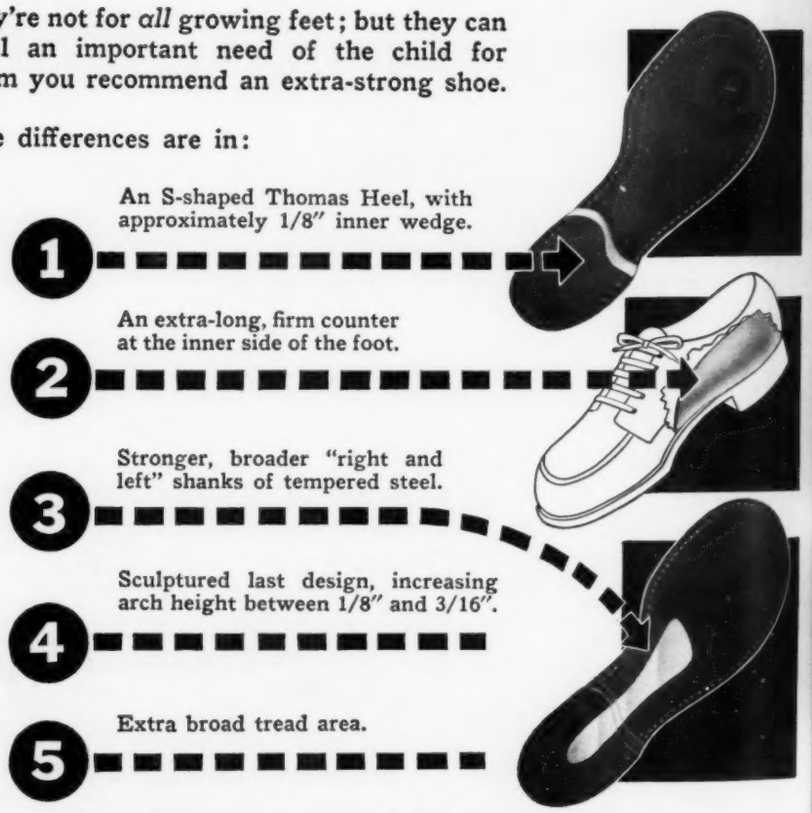
They're not for *all* growing feet; but they can fulfill an important need of the child for whom you recommend an extra-strong shoe.

The differences are in: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(Continued from page 66)

WANTED—GENERAL AND TRAUMATIC SURGEON; Board qualified, hospital work, eastern state; please give personal, church, schooling, and training details; salary $20,000. Box 3218 C, % AMA.

WANTED — YOUNG GENERAL PRACTITIONER; service exempt; for association with another young general practitioner in small Maryland community. Box 3172 C, % AMA.

YOUNG GENERAL PRACTITIONER — TO JOIN BUSY physician in New York State; good opportunity in growing community; well-equipped local hospital; $12,000 1st year then partnership. Box 3125 C, % AMA.

OPPORTUNITY FOR ENERGETIC INTERNIST OR general practitioner—who desires to build practice in rapidly growing city of far northwest; salary 1st year with eventual partnership. Box 3121 C, % AMA.

WANTED — PHYSICIAN; TO TAKE OVER ESTABlished general practice in southern Illinois town of 8000; will sell equipment, rent office; excellent hospital facilities. Box 3061 C, % AMA.

WANTED—RECENT GRADUATE; TO JOIN 3 ACTIVE MDs in general practice, North Dakota; excellent hospital and clinic facilities; start $11,000; full particulars 1st letter. Box 3096 C, % AMA.

WANTED—SURGEON INTERESTED IN SURGICAL assistanceship on salary basis; chief duty will be assisting in operating room with heavy surgical service. Box 3105 C, % AMA.

OPHTHALMOLOGIST—ASSOCIATE; MIDWEST CITY, population over 50,000; $1000 a month; please send details of educational background, etc. Box 3111 C, % AMA.

GENERAL PRACTITIONER WANTED—LARGE CENtral California city; leaving for service May or June; practice grossing $38,000; no investment necessary; good opportunity for right man. Box 3185 C, % AMA.

RADIOLOGIST—DIRECTOR OF DEPARTMENT: 300 bed general hospital*+; Boston area; certified for both pathological and clinical laboratories. Box 3213 C, % AMA.

WANTED — YOUNG GENERAL PRACTITIONER; TO take over my completely equipped office in Mason, Texas; on a rental basis; good opportunity. E. O. Breckenridge, M.D., Mason, Texas. C

WANTED—FULL TIME PHYSICIAN; FOR SOUTHeastern railway under age 56; give full information as to education, training and experience. Box 3210 C, % AMA.

OPHTHALMOLOGIST — BOARD CERTIFIED OR ELIgible; middle west; initial salary open; opportunity for early partnership. Box 3134 C, % AMA.

CALIFORNIA CAREER OPPORTUNITIES FOR
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Employment available as a result of interview only. *Interviews at the APA Conference May 13-17 in Chicago and in such other locations as New York, Boston, St. Louis, Philadelphia, and Minneapolis during May and June.* Assignments in State hospitals, juvenile and adult correctional facilities, or a veterans home. Three salary groups: $10,860-12,000; $11,400-12,600; $12,600-13,800. Citizenship, possession of, or eligibility for California license required. Write Medical Recruitment Unit, Box F, State Personnel Board, 801 Capitol Avenue, Sacramento 14, California. C

GENERAL PRACTITIONER—CALIFORNIA LICENSE required; 3 man group; excellent working conditions; basic salary $12,000 annually plus percentage when qualified. P. O. Box 2132, Inglewood, California. C

YOUNG PHYSICIAN—INTERESTED IN WORKING IN southern West Virginia industrial and general practice; West Virginia license required. Contact: N. F. Coulon, MD, Gary, West Virginia. C

YOUNG GENERAL PRACTITIONER—TO TAKE THE place of deceased partner; small village 35 miles from Chicago Loop; 1st year choice of $1000 per month or 20%; unexcelled opportunity. Box 3123 C, % AMA.

OPPORTUNITY FOR MEDICAL DOCTOR—IN NORTHeast Montana; badly needed; progressive wheat, ranching and oil development area; office and housing no problem. Contact: Chamber of Commerce, Poplar, Montana. C

NATIONAL MEDICAL ORGANIZATION—HAS OPENing for qualified physician interested in medical education; assignment involves considerable travel; please give full details in 1st letter. Box 3003 C, % AMA.

WANTED—EENT PHYSICIAN; 254 BED GENERAL medical and surgical hospital, located at home of University of Arkansas, in heart of Ozarks. Contact: Personnel Officer, VA Hospital, Fayetteville, Arkansas. C

GENERAL PRACTICE—ASSOCIATE WANTED; JULY, 1957; Mid-Atlantic area; salary 1st year; opportunity for partnership 2nd year; give pertinent data in reply. Box 2882 C, % AMA.

PEDIATRICIAN—WANTED BY MEDICAL CLINIC IN Minnesota; Board eligible or certified; excellent starting salary with opportunity for association with group after 1 year. Box 3157 C, % AMA.

WANTED—OPHTHALMOLOGIST; BOARD OR BOARD eligible; excellent opportunity city of Houston, Texas; good starting salary; give age, religion, training, starting salary expected in letter. Box 3136 C, % AMA.

RADIOLOGIST — CERTIFIED OR ELIGIBLE; UNDER 35; experience in isotopes Cobalt 60 teletherapy; radiologists private office and hospitals, southwest; opportunity for partnership. Box 3137 C, % AMA.

OBSTETRICIAN-GYNECOLOGIST—BOARD ELIGIBLE or certified; 14 man specialty group; college town 15,000, southern Illinois; no own surgery; no investment needed. Box 3133 C, % AMA.

WANTED — GENERAL PRACTITIONER; 200 MILES north of Milwaukee; monthly salary plus fees; home and some equipment available; urgently needed July 1, 1957. Doctor Committee, Washington Island, Wisconsin. C

ANESTHESIOLOGIST—377 bed, 65 bassinet; short-term general hospital*+ in Mid-Atlantic area; opportunity to associate with 3 Board certified men in very active practice. Box 3128 C, % AMA.

WANTED—ASSOCIATE IN GENERAL AND TRAUmatic surgery and industrial work; Chicago area. Box 2870 C, % AMA.

INTERNS AND RESIDENTS WANTED

*The * signifies a hospital approved for internships and the + approved for residencies in specialties by the Council on Medical Education and Hospitals of the A. M. A. Consult Council's approved list for types of internships and residencies approved.*

VA HOSPITAL,+ CORAL GABLES, FLORIDA, IN affiliation with the School of Medicine, University of Miami, is offering resident training in internal medicine, general surgery, and pathology, to qualified physicians who are citizens of the United States and graduates of approved medical schools; applications are being accepted for immediate assignment and for programs beginning July 1, 1957. Address letters of inquiry to: Chief of Service, Veterans Administration Hospital, Coral Gables, Florida. D

RADIOLOGY RESIDENCY—FULLY APPROVED FOR 3 years training; teaching general hospital;*+ 800 beds; out-patient visits, 63,000 yearly; X-ray diagnostic examinations, 34,089 in 1956; stipend and full maintenance; organized teaching program in diagnostic and therapeutic radiology including isotopes; affiliated with New York University-Bellevue Medical Center; 3 full-time diplomates; openings July 1, 1957 and September 1, 1957. Address: Director of Radiology, St. Vincent's Hospital, New York 11, New York. D

PATHOLOGY—RESIDENCIES, PATHOLOGIC ANATomy, beginning July 1, 1957, or quarterly thereafter; V.A. Hospital,+ Durham, North Carolina, a Dean's Committee Hospital; vacancy in clinical pathology July 1, 1958; salary range $2840-$4500 depending on prior training; U. S. citizenship required. Inquire: Dr. Roger D. Baker, Chief, Laboratory Service, Veterans Administration Hospital, Durham, North Carolina. D

RESIDENCY INTERNAL MEDICINE—1100 BED GENeral hospital+; 3 year; teaching unit, Baylor University College Medicine; female, private, out-patient medicine; includes all subspecialties under supervision of Board certified specialists; stipend $2840-$3550; radioisotopes, pulmonary function, research etc.; citizenship required. H. D. Bennett, MD, Veterans Administration Hospital, Houston, Texas. D

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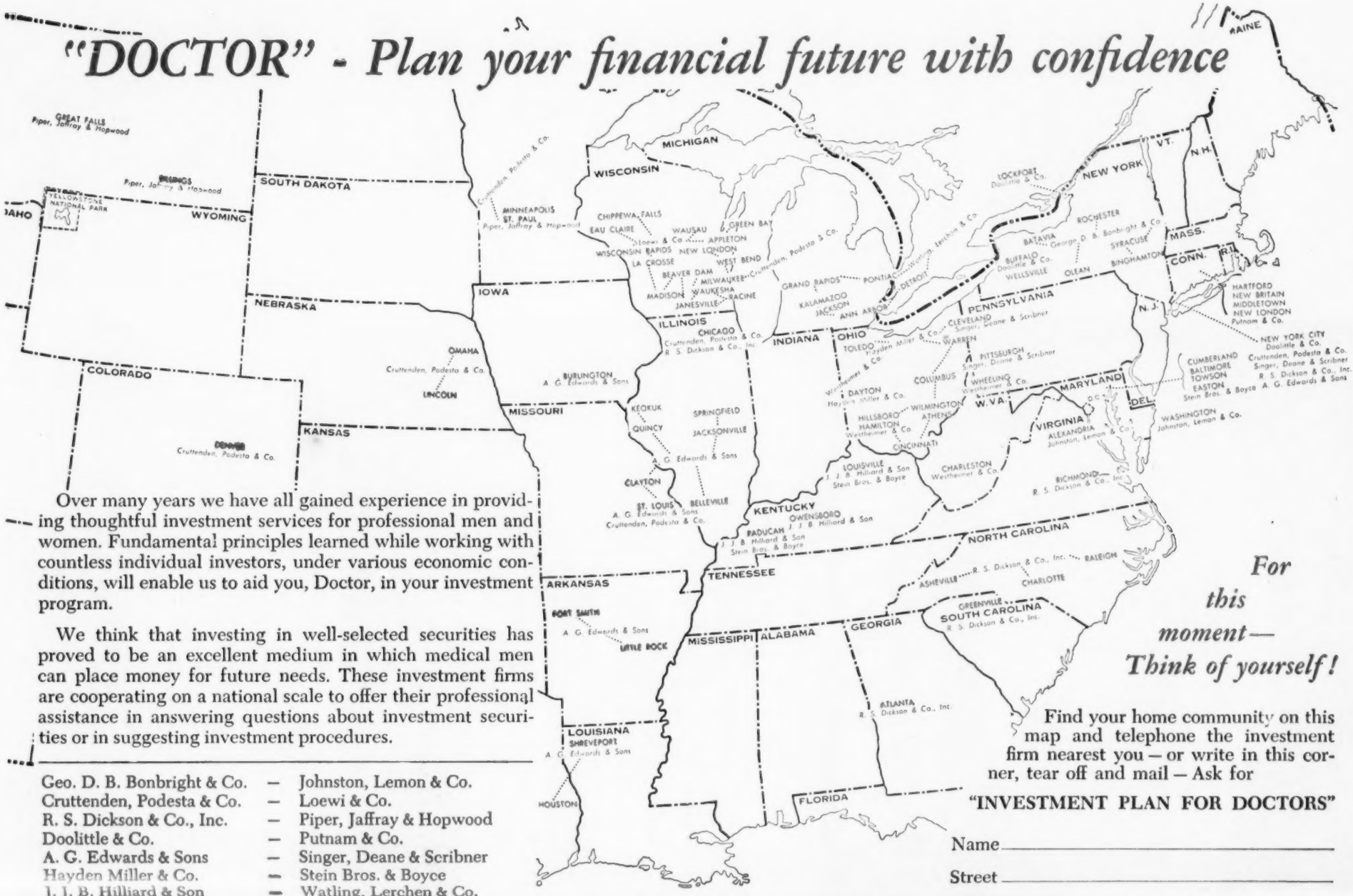

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(Continued from page 63)

PHYSICIANS—WITH OR WITHOUT PUBLIC HEALTH training; and pediatricians needed; in maternal and child health program at salaries from $8,368 through $10,405; 5 day week, pension, civil service appointment. Dr. E. R. Krumbiegel, Milwaukee Health Department, City Hall, Milwaukee 2, Wisconsin. C

WANTED — TWO YOUNG, SINGLE PHYSICIANS; TO act as resident physician, one in our railroad hospital at Waycross, Georgia, and the other in our hospital at Rocky Mount, North Carolina. Contact: J. C. Bunten, MD, Chief Surgeon, A. C. L. General Office, Wilmington, North Carolina. C

MEDICAL DIRECTOR — EXCELLENT OPPORTUNITY for physician to direct medical service and clinical research activities of rapidly expanding pharmaceutical company; eastern location; send complete details including age, education, experience and military status. Box 3135 C, % AMA.

GENERAL PRACTITIONER NEEDED — FOR MISsouri town of 1000 in beautiful part of Ozarks; only MD wants to specialize; completely equipped office and modern home available; ample income and variety of pathology; financing available; will introduce. Box 3166 C, % AMA.

OTOLARYNGOLOGIST WANTED — ASSOCIATE TO Board man in college town near Cleveland; salary, then full partnership in 2 or 3 years. Box 3171 C, % AMA.

ANESTHESIOLOGIST — BOARD OR ELIGIBLE; ASsociation with diplomate; expanding suburban hospital; attractive living area near medical schools; guarantee plus percentage leading full partnership if permanent; fee for service; East; give background. Box 3148 C, % AMA.

WANTED—AMERICAN BOARD SPECIALISTS; PHYsicians interested in group or private practice, teaching, research, public health or industrial medicine; National and International services. Burneice Larson, Director, Medical Bureau, 900 N. Michigan Ave., Chicago. C

INTERNISTS AND GENERAL PRACTITIONERS wanted—to work with psychiatric patients in 2400 bed hospital+; suburb Chicago; salary ranges $7570-$12,685, depending upon qualifications; citizenship required. Write: Manager, Veterans Administration Hospital, Downey, Illinois. C

RADIOLOGIST—CERTIFIED OR BOARD ELIGIBLE; to associate with young diplomate; busy hospital practice, includes radium and isotopes; large progressive, prosperous mid-west city; $15,000 salary leading to partnership; give qualifications and details in 1st letter. Box 3051 C, % AMA.

GENERAL PRACTITIONER—WITH TRAINING IN pediatrics; willing to do 75% pediatric and 25% general practice; must be graduate of Class "A" school; under 40; married; and draft exempt; to join established group of 7 young physicians and 2 dentists. Box 3173 C, % AMA.

GENERAL PRACTITIONERS—IMMEDIATE OPENings with medical group, southwestern Pennsylvania; excellent educational opportunities, paid annual vacation and study period; net starting income $12,000-$15,000 depending on training and experience. Box 3170 C, % AMA.

ANESTHESIOLOGIST—BOARD CERTIFIED OR ELIgible; to join group practicing in 300 bed Middle Atlantic hospital; excellent financial arrangements, partnership later; full details first letter. Box 3168 C, % AMA.

ASSISTANT SURGEON—INTERESTED IN GENERAL and cardiac surgery; should have Illinois license; preferably single; willing to work evenings if necessary; good salary and excellent opportunity. Chief Surgeon, Edgewater Hospital*, Chicago, Illinois.

DOCTOR FOR CHILDREN'S SUMMER CAMP—IN New York State; will take for any period of from 2 to 8 weeks service, between July 1st and August 26th; 2 R.N.'s will assist. J. Marcus, 202 West 40th St., New York, New York. C

GENERAL PRACTITIONER — STUART OKLAHOMA; to serve trade area of 4,000; partially equipped office of former deceased doctor available; good church town, new school, modern pharmacy. Contact: Robert Nunn, Postmaster. C

ASSOCIATE — GENERAL PRACTICE; SEATTLE, Washington; salary 1st year; percentage or partnership thereafter if desired; new modern office building; personal and professional data requested in reply. Box 3151 C, % AMA.

WANTED—OTOLARYNGOLOGIST AND AN OPHthalmologist; to join practicing otolaryngologist in East; new clinic being planned; Board eligible or Board member necessary; salary leading to partnership. Box 3146 C, % AMA.

PEDIATRICIAN — TO BE ADDED TO DEPARTMENT of pediatrics of The Lynn Clinic, Detroit 17, Michigan; commencing annual salary of $15,000, plus bonus; forward all particulars of training and experience to: Chairman, Credentials Committee. C

WANTED — PHYSICIAN; GENERAL PRACTICE; 6 man group; Mining Company hospital for employees and families; office and car furnished; $10,000 with fringe benefits; immediate opening. Write: Box 877, Lead, South Dakota. C

WANTED—A YOUNG, BOARD QUALIFIED ORTHOpedist; to fill position of associate in the department of traumatic and orthopedic surgery; situation permanent if mutually satisfactory. Arnold S. Jackson, MD, Jackson Clinic, Madison, Wisconsin. C

OPPORTUNITY FOR INTERNIST — YOUNG QUALIfied or certified to associate with group in expanding area, northern, midwestern states; unique organization; new, fully-accredited open-staff, 120 bed hospital. Box 3131 C, % AMA.

GENERAL PRACTITIONER — FOR RURAL COMmunity of 1000; needs replacement; present doctor specializing; 9 room modern community owned clinic building; very well-equipped; 1956 gross $29,000. Box 295, Beaver City, Nebraska. C

HUNTINGTON, LONG ISLAND — DOCTORS SUITES available in new air conditioned medical building being constructed by established 8 man group; excellent location for ENT, ophthalmologist, urologist, psychiatrist, dental specialties, etc. Write: Box 2915 C, % AMA.

RADIOLOGIST — FOR ASSOCIATION IN PRIVATE practice and hospital near Los Angeles; salary of $1000 per month with partnership arrangements at end of 1 year period; personal interview essential; give full details in 1st letter. Box 3110 C, % AMA.

ORTHOPEDIC SURGEON — CERTIFIED OR ELIGIble; immediate opportunity of association leading to partnership in 8 man group; new quarters; southern Wisconsin industrial city of 35,000. Box 3104 C, % AMA.

PEDIATRICIAN — TO ASSOCIATE WITH ESTABlished Board man in Florida; attractive living and working conditions; certified or Board eligible; qualifications with educational background in 1st letter. Box 3107 C, % AMA.

CALIFORNIA MEDICAL BUREAU AGENCIES—FOR physicians placements and hospitals and medical properties for sale. 405 E. Green Street, Pasadena, California, and 610 S. Broadway Street, Los Angeles 14, California. C

WANTED — PHYSICIAN IN INTERNAL MEDICINE; ultra modern, fully accredited, 100 bed hospital; chiefs of medicine and surgery are diplomates; salary up to $12,900; quarters available. Apply: Dr. Robertson, Manager, VA Hospital, Miles City, Montana. C

STAFF PHYSICIAN—LARGE SOUTH-CENTRAL TUberculosis sanatorium; university affiliated; minimum experience; full family maintenance; 2 bedroom home; license required; give full particulars 1st letter. Box 3093 C, % AMA.

WANTED—EXTRA GENERAL PRACTITIONER FOR summer months, June, July, August, September; in resort town; salary plus percentage; opening for permanent position, if desired. Write: Dells Clinic, Wisconsin Dells, Wisconsin. C

HOUSE PHYSICIAN—FOR NEW AIR-CONDITIONED modern 400 bed general hospital; comfortable living quarters, attractive personnel policies. Apply: Administrator, Richmond Memorial Hospital, 1300 Westwood Avenue, Richmond, Virginia. C

WANTED — YOUNG GENERAL PRACTITIONER; TO associate with busy general practitioner located in residential suburb of Chicago; starting salary $12,000; please state qualifications and plans. Box 3144 C, % AMA.

GENERAL PRACTICE ASSOCIATE OR ASSISTANT— medium sized Florida town; new hospital and full staff privileges; salary or percentage, partnership within 1 year; Florida license required. Box 3192 C, % AMA. C

ASSOCIATE TO OPHTHALMOLOGIST—IN WASHington, D. C.; must be well-qualified in eye surgery; salary $15,000 to $17,000 to start depending on ability and training. Box 3175 C, % AMA.

(Continued on page 68)

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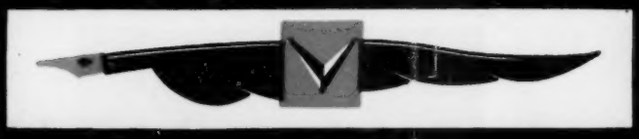

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1, 2.5, 5 mg. buff-colored tablets.

(Continued from page 71)

PATHOLOGIST — CERTIFIED PATHOLOGIC ANATOMY; eligible clinical pathology; 14 years general hospital experience; university affiliated; professional rank; interested in opening in any region; available July, 1957. Box 3226 I, % AMA.

PATHOLOGIST—CERTIFIED PATHOLOGICAL ANATOMY and clinical pathology; age 40; 8 years experience supervising general hospital laboratory; desires general hospital in pleasant community desiring good clinical and conscientious anatomic work. Box 3221 I, % AMA.

ANESTHESIOLOGIST — MARRIED; BOARD ELIGIble; well-trained in all techniques; desires a permanent location in a West Coast State; preferably with an established group; send full information. Box 3253 I, % AMA.

IF IN NEED OF AMERICAN BOARD SPECIALISTS to head departments, physicians for private practice, industry or public health, please write for recommendations. Woodward Medical Personnel Bureau, 185 N. Wabash, Chicago.

DERMATOLOGIST—BOARD ELIGIBLE; 34; SINGLE; completing residency training in July; seeks association with clinic group preferably in southeast; prefer city of 50,000 or over; military service completed. Box 3254 I, % AMA.

INTERNIST—30; MARRIED; BOARD ELIGIBLE; 3 years training in large New York and Chicago Medical Centers; desires assistantship with internist or group; available July 1957. Dr. David Dworkin, 1314 E. Hude Park Blvd., Chicago, Illinois. I

PHYSICIAN-SURGEON — 36; FAMILY; GRADUATE grade A school; general residency; varied general practice experience with surgery and obstetrics; desires location or association California; available for interview. Box 3266 I, % AMA.

TWO PEDIATRICIANS—AGE 30; FULLY TRAINED; seek joint practice; town under 100,000; with obstetrician (s); upper mid-west, Rockies, California; rental space necessary; would also consider clinic affiliation. Box 3267 I, % AMA.

INTERNIST—BOARD ELIGIBLE; 33; DNB; PRIORITY IV; County and university hospital residencies; married; desires full time academic career in internal medicine on medical school faculty. Box 3233 I, % AMA.

EXPERIENCED, FLORIDA LICENSED, FACS—WHO also likes general practice; wants to become associated with general surgeon, or general practitioner, or doctor who does both in Florida. Box 2327 I, % AMA.

THORACIC SURGEON—33; COMPLETING 2 YEAR thoracic surgery residency June 30th; category IV; seeks location in association, group, or private practice; prefer eastern half of country. Box 3264 I, % AMA.

SURGEON—BOARD CERTIFIED; 34; WILLING TO do general practice; would like to associate with general practitioner with large practice, group, or individual; trained in all fields. Box 3263 I, % AMA.

PEDIATRIC RESIDENCY COMPLETED JULY, 1957—desire affiliation in southern coastal California; 1 year general practice and 2 years military service prior residency; married; age 29. Box 3261 I, % AMA.

INTERNIST-GASTROENTEROLOGIST — CERTIFIED by both Boards; Mayo clinic and university training including gastroenterology hematology, peripheral vascular diseases; qualified in gastroscopy, bone marrow interpretation; publications; desires association. Box 3190 I, % AMA.

THERAPEUTIC RADIOLOGIST—CERTIFIED; EXTENsive experience; seeks relocate in west or Southwest; prefers group or tumor clinic; income not of primary importance; willing accept part time teaching position. Box 3197 I, % AMA.

PATHOLOGIST—AGE 43; CERTIFIED PATHOLOGIC anatomy; eligible clinical pathology; neuropathology 1½ years; teaching and research experience; many publications; retiring from Navy; desire hospital or several hospitals; available February 15, 1958. Box 3174 I, % AMA.

INTERNIST—35; FAMILY; CLASS A SCHOOL; 5 years private practice experience; Board eligible; service requirement fulfilled; desires association with another internist, salary and/or partnership in mind; Illinois license, other states considered. Box 3196 I, % AMA.

SURGEON — GENERAL; 4 YEARS OF SURGICAL training; desires preceptorship or association with Board surgeons; to complete Board requirements; 35 years; unmarried; available July 1st, 1957. Box 3209 I, % AMA.

ANESTHESIOLOGIST—DIPLOMATE; DESIRES PRIvate practice, fee for service basis; mountain or midwestern states, moderate sized community; good education facilities essential; available June or July. Box 2991 I, % AMA.

GENERAL SURGEON — 33; MARRIED; BOARD ELIgible; qualified orthopedics, chest, urological, head-neck, traumatic; Oregon, Washington, California license; desires association with surgeon or clinic; prefer West. Box 3119 I, % AMA.

WHEN IN NEED OF AMERICAN BOARD SPECIALists to head departments, physicians for private practice, public health or industry, please write for recommendations. Burneice Larson, Director, Medical Bureau, 900 N. Michigan Ave., Chicago. I

AVAILABLE—AMERICAN BOARD SPECIALISTS TO head departments, join groups, etc.; physicians for private practice, assistants or associates, industry, public health. Please write for recommendations. Shay Medical Agency, 55 E. Washington, Chicago. I

PATHOLOGIST — MATURE; CP CERTIFIED; EXPErienced and Board eligible in PA; desires partnership plan with pathologist mainly in private practice; good organizer; well-organized training, background and references. Box 3141 I, % AMA.

INTERNIST — FACP; 36; CERTIFIED; INTERESTED gastroenterology; also trained diagnostic radiology; wishes to have hospital post for group practice; licensed New York, Florida, California, Washington; send full details. Box 3140 I, % AMA.

PEDIATRICIAN WANTED — CERTIFIED OR ELIgible; to associate with pediatrician New York State community and radius approximately 100,000; eventual partnership; send biography 1st letter; New York license or eligible. Box 3153 I, % AMA.

ANESTHESIOLOGIST — COMPLETING RESIDENCY July; available September; female; North Carolina license; desires private practice with one or more or group; middle or South-Atlantic States. Box 3149 I, % AMA.

UROLOGIST — BOARD ELIGIBLE; DESIRES RELOcation with group or other urologist, or private practice location; National Board diploma, also Florida license; age 49; family; veteran. Box 3147 I, % AMA.

INTERNIST — 32; BOARD CERTIFIED; FAMILY; desires partnership or other association with one or more internists in eastern United States; veteran. Box 3163 I, % AMA.

GENERAL PRACTITIONER—33; FAMILY; PRIVATE practice 6 years; service obligation just completed; seeks position in industry, insurance or student health; South only. Box 3182 I, % AMA.

ANESTHESIOLOGIST — PART I, ABA, FACA, DEsires location; fee for service. Box 3187 I, % AMA.

PROFESSIONAL AND TECHNICAL AIDES

BIOCHEMIST—TO SUPERVISE CLINICAL LABORAtory in 200 bed hospital in suburban Philadelphia, Pennsylvania; will consider experienced person who has retired from active participation in the field. Box 3245 I, % AMA.

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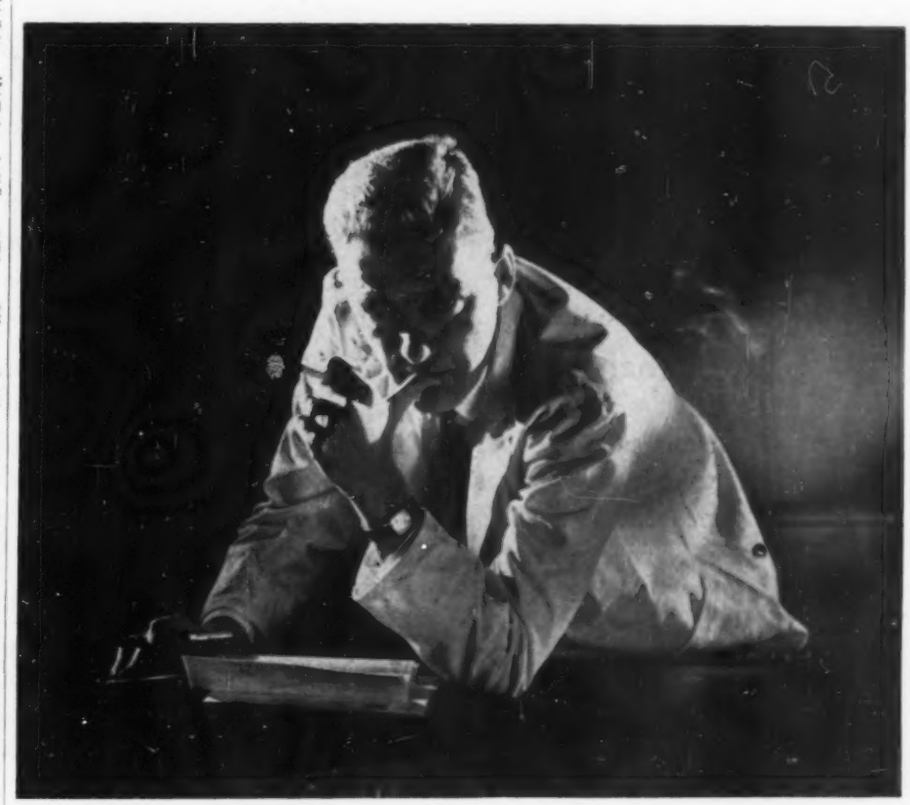
WANTED—LABORATORY TECHNICIAN; FOR 3 DOCtors in clinic and hospital; Beeville, Texas, population 15,000. Address: Drs. Lancaster, McNeill & Miller, Beeville, Texas. I.

MEDICAL RECORDS LIBRARIAN — REGISTERED; 200 adult bed hospital in Massachusetts; 35 miles from Boston, Massachusetts, and 12 miles from Providence, Rhode Island. Box 3201 I, % AMA.

(Continued on page 77)



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REFERENCES

(1) Jones, W. F, Jr.; Nichols, R. L., & Finland, M.: *Proc. Soc. Exper. Biol. & Med.* **93**:388, 1956. (2) Spink, W. W.: *Ann. New York Acad. Sc.* **65**:175, 1956. (3) Kempe, C. H.: *California Med.* **84**:242, 1956. (4) Rantz, L. A., & Rantz, H. H.: *Arch. Int. Med.* **97**:694, 1956. (5) Kirby, W. M. M.; Corpron, D. O., & Tanner, D. C.: *J.A.M.A.* **162**:1, 1956. (6) Nichols, R. L., & Finland, M.: *Antibiotic Med.* **2**:241, 1956. (7) Pearson, J. Z.; Somberg, A.; Rosanthal, I.; Lepper, M. H.; Jackson, G. G., & Dowling, H. F.: *Arch. Int. Med.* **98**:273, 1956. (8) Wise, R. I.; Cranny, C., & Spink, W. W.: *Am. J. Med.* **20**:176, 1956. (9) Kirby, W. M. M.; Hudson, D. G., & Noyes, W. D.: *Arch. Int. Med.* **98**:1, 1956. (10) Walton, R. P.; Parker, R. T.; Sandusky, W. R., & Schaffer, A.: Panel discussion, *J. South Carolina M. A.* **52**:33, 1956. (11) Altemeier, W. A.: *Postgrad. Med.* **20**:319, 1956. (12) Weil, A. J., & Stempel, B.: *Antibiotic Med.* **1**:319, 1955. (13) Krantz, J. C., Jr.: *Current M. Digest* **23**:61 (Sept.) 1956. (14) Smith, R. T.; Platou, E. S., & Good, R. A.: *Pediatrics* **17**:549, 1956. (15) Royer, A.: Scientific Exhibit, 89th Ann. Conv., Canad. M. A., Quebec, Canada, June 11-15, 1956.

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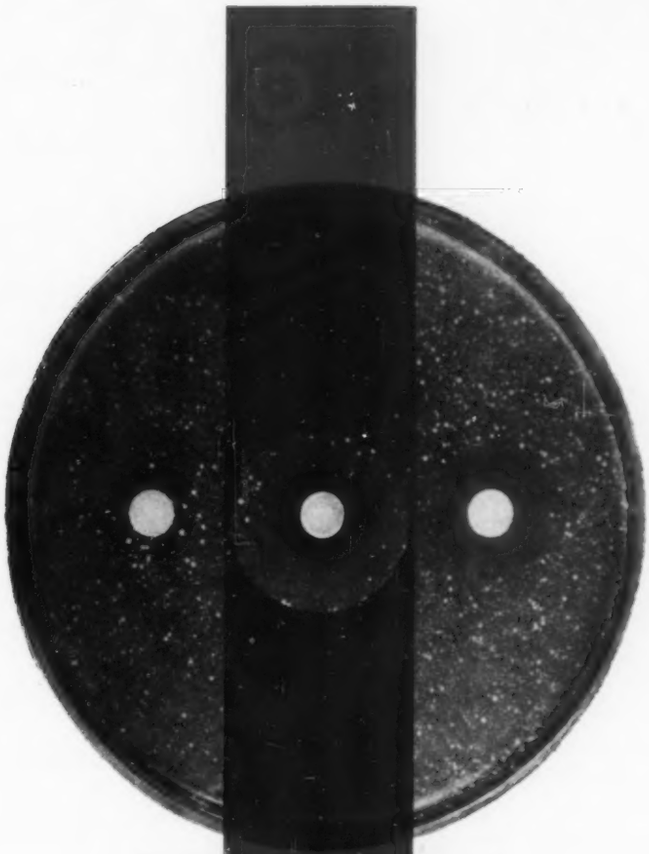

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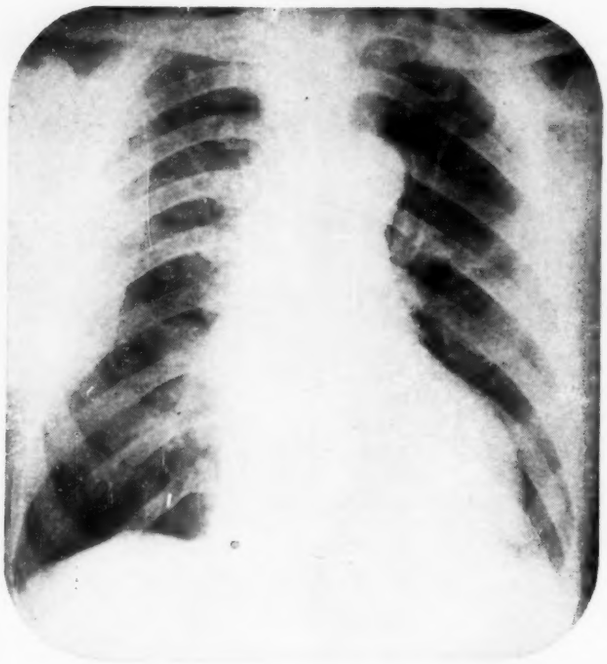

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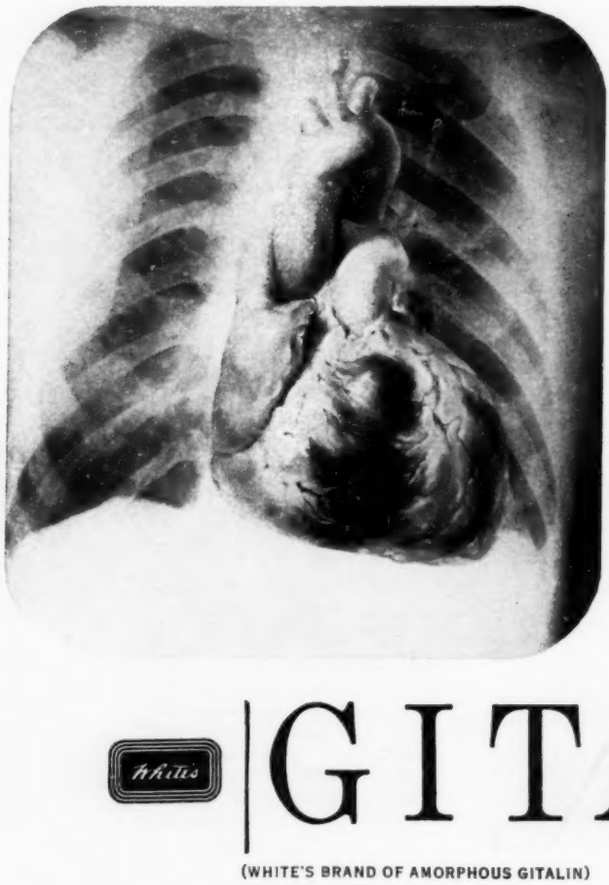
Moderate left ventricular enlargement with prominence and calcification of aortic knob.

Taken from White Laboratories' Technical Exhibit, American Medical Association, 105th Annual Meeting, Chicago, June 11-15, 1956.



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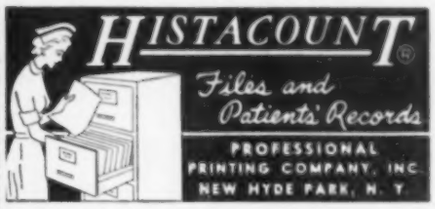

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Desoxyn alone should not be relied upon to induce weight reduction but should be used only under the direction of a physician in conjunction with the prescription of a general hygienic regime and a special diet.

DOSAGE, SIDE EFFECTS—THE DOSE OF DESOXYN must be adjusted in accordance with the requirements and response of the individual patient. When the anoretic effect of the drug is desired, as adjunctive therapy in an obesity program, Desoxyn should be administered one-half to one hour before meals. In other instances the anoretic effect of the drug might not be desired; in these cases, Desoxyn should be administered with meals or immediately after meals.

Orally, the initial dose should be 2.5 to 5 mg., two to three times daily. Larger doses may be required in some cases, and should be arrived at cautiously. They may be continued as long as the desired beneficial results accrue and there are no untoward effects. Individual oral doses in excess of 10 mg. are likely to produce undesired cerebral stimulation. Medication is not recommended after 4 p.m. or at night, because of the possibility that the drug may interfere with sleep. If the patient is unable to sleep at night, the afternoon dose may be omitted or the excessive stimulation counteracted by the use of effective sedatives such as Nembutal.®

OTHER INDICATIONS: DEPRESSIVE STATES—Desoxyn Hydrochloride is indicated for oral administration in the treatment of narcolepsy and in cases of mild depression accompanying or aggravating prolonged illness, convalescence, old age, or the menopause. A feeling of well-being and increased energy will generally be produced in the patient. This lessens nervous tension and may aid in securing cooperation for more specific therapy.

Favorable results have also been reported following the use of *d*-desoxyephedrine hydrochloride as an adjunct to the treatment of postencephalitic Parkinson's syndrome, chronic alcoholism and generally in conditions for which amphetamine sulfate has been of benefit.

In major psychopathic depressions, as well as in mild depressive states, *d*-desoxyephedrine hydrochloride may facilitate management of the patient but will not affect the underlying psychosis. The drug has not been of benefit in treatment of myasthenia gravis.

INDICATIONS—DESOXYN HYDROCHLOride Tablets and Elixir should be used with caution in patients with cardiovascular disease, thyroid disturbance, hypertension, or in persons of advanced age. The drug is contraindicated also in neurotic or hyperexcitable persons, or in those who have shown sensitivity to ephedrine or ephedrine-like substances.

ACTION—DESOXYN PRODUCES EFFECTS SIMILAR to those produced by racemic amphetamine. Like the latter, it elevates the mood, increases the urge to work, imparts a sense of increased efficiency and counteracts sleepiness and the feeling of fatigue in most persons. It does not produce the rather marked peripheral pressor effects of ephedrine, except in large doses.

ONSET SWIFT—ONSET OF EFFECT WITH DESOXYN occurs in from 20 minutes to one hour. The duration of action of a single dose of 10 mg. orally varies from six to 12 hours, though in exceptional cases effects may be noted for as long as 36 hours. Sleep is disturbed the night following a dose of 10 to 15 mg. at breakfast in some subjects. By dividing the dosage, insomnia may usually be avoided. The drinking of coffee increases the effect of the drug. Intensity of stimulative effect is somewhat greater in normal than in depressed or alcoholic persons.

BLOOD PRESSURE, PULSE RATE AND RESPIRATORY rate usually are only slightly or temporarily affected, unless oral doses exceeding 10 to 15 mg. daily are taken.

THE PARENTERAL ADMINISTRATION OF DESOXYN Hydrochloride is suggested for restoring and maintaining blood pressure during operative procedures, particularly during spinal or regional block anesthesia. Its use is suggested to combat acute hypotension during surgical operations and for preoperative administration, particularly before spinal anesthesia, to patients who manifest hypotension or who are considered poor surgical risks.

TOLERANCE NOT DEVELOPED. WHILE THE DRUG is not habit forming in the true sense of the word, some depressed persons may come to rely on it for stimulation, or normal subjects may be induced to use it in excess for relief of fatigue. Tolerance to the drug is not developed. The euphoric and waking effects decrease with protracted use of the drug on account of the accumulated need for sleep and rest. As a result, a larger dose is required to combat the increased need for sleep, and it is the larger dose that produces the undesirable circulatory and metabolic effects. Withdrawal of the drug may thus be rendered imperative. Administration of Desoxyn should be under the constant supervision of a physician.

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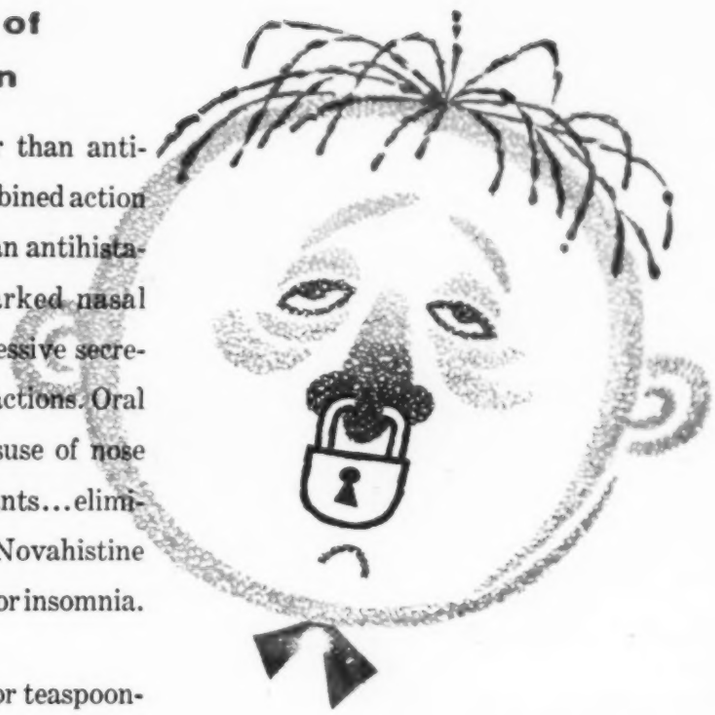

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